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XVII

WELFARE AS AN ECONOMIC QUANTITY

WELFARE AS AN ECONOMIC QUANTITY

BY

G. P. WATKINS

BOSTON AND NEW YORK
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PREFACE

This series of books owes its existence to the generosity of Messrs. Hart, Schaffner & Marx, of Chicago, who have shown a special interest in trying to draw the attention of American youth to the study of economic and commercial subjects. For this purpose they have delegated to the undersigned committee the task of selecting or approving of topics, making announcements, and awarding prizes annually for those who wish to compete.

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Any essay submitted in Class B, if deemed of sufficient merit, could receive a prize in Class A.

The present volume, submitted in Class A, was awarded the second prize in that class.

J. Laurence Laughlin, *Chairman.*
University of Chicago.

John B. Clark,
Columbia University.

Henry C. Adams,
University of Michigan.

Horace White,
New York City.

Edwin F. Gay,
Harvard University.

AUTHOR'S PREFACE

This essay is a study in the neglected field of economic consumption. It is a fragment of what was planned as a comprehensive treatise of this division of economics, and largely developed during my graduate work at Cornell University. But the part may be the better for standing by itself. It is frankly theoretical in general character. I quite agree that questions susceptible of detailed inductive or statistical investigation should receive such treatment instead of merely being given their place in a theory. That, however, must come later.

Most of the essay assumes familiarity with the concepts and terms of recent economics and is technical in its interest. Certain chapters, however, — which are not among the earliest, — may perhaps be intelligible and interesting to the reader whose chief equipment is common knowledge and common sense. These are especially chapters VIII (with VII as preliminary) and XVI; and also, though to a less degree, chapters V, XI, XIII, XIV, and XV. Whether a person of practical or reformative interest would be justified in going directly to the concluding chapter is to be doubted.

No fundamental premises of economic thought are essentially affected by the ideas contained in this essay. It does propose certain qualifications and extensions of accepted principles. What may be considered the general contribution it makes consists in the incorporation into systematic economic thought of some ideas that are, if not themselves new, such as can be found elsewhere — perhaps in common thought or in writings of no scientific standing — only as disconnected *aperçus*.

My scientific obligations, and the interrelations of the ideas developed to those of others, are indicated in text

and in footnotes, but I am not sure that all have been duly noted, since the matter was originally written some time ago and has undergone many changes. Though much that is characteristic of the Austrians — Menger, Wieser, and Böhm-Bawerk — is not accepted here, my point of departure is obviously the same as theirs. The development from that point is in a different direction. The differences that emerge are partly, though not wholly, due, to this divergence of the subjects treated. The essay is, however, largely a criticism of the usual exposition of utility doctrine. Suggestions received from recent American theory are also frequently negative, belonging, that is, in the category of association by contrast or opposition.

The manuscript has been subjected to the criticism of Professor Alvin S. Johnson, who acted in place of Professor Clark as a judge of the papers submitted to the Hart, Schaffner & Marx Committee and has reviewed on its behalf the essay here published. He has made important suggestions regarding terminology and also toward connecting up the ideas presented with those of other economic theorists, and he has made it necessary for me to elaborate and defend or to amend certain points. But I have no reason to suppose that he would accept as valid all the theories here set forth. With this exception the essay has not had the benefit of the friendly criticism of economists. But I am much indebted to two of my associates in the Bureau of Statistics and Accounts of the Public Service Commission, namely, to Mr. James L. Bahret, for numerous valuable editorial suggestions, and to Mr. L. H. Lubarsky, not only for drafting the diagrams, but for important mathematical assistance, including certain notes bearing his initials. Acknowledgment is also due to Professor John B. Clark for encouraging me to complete and publish this little book, which was first presented on somewhat the present plan as a paper in his seminar.

G. P. Watkins.

New York City,
May 31, 1914.

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INTRODUCTION

WELFARE AND UTILITY

THE title of this essay, "Welfare as an Economic Quantity," should give some notion of the interest and importance of its subject. Welfare comprehends or represents all things of reasonable and rightful desire. Its economic foundations, it is true, may seem less interesting. This very fact is presumptive evidence that the dependence of welfare upon economic conditions has not received the attention it deserves. Welfare, or a large part of welfare, is, in mathematical parlance, a function of the control of economic goods. In other words, the quantity or degree of welfare depends in large measure upon economic goods and upon the use made of them. It is the writer's purpose to contribute something toward an understanding of this quantitative relation between goods and welfare.

If it were desirable to make the title also a definition of the subject, it might read, "Kinds of Utility and their Variation." This is technically more accurate, but also less generally intelligible than the other. Such a technical label does not do justice to the human interest of this phase of the study of economic consumption.

It is not to the purpose to discuss in this essay the nature and essence of welfare. It suffices to make explicit the assumption that welfare is an all-round satisfactory state of being, securely grounded in material and economic as well as other elements. The idea is properly associated with that of a sufficiency of economic goods, though the state is not thus simply constituted. Some will be inclined to beg the question at this point, chiefly those sheltered ones who do not know what it is to do without any necessary

or convenience. Any one who believes that the essence of welfare is a state of mystic contemplation or something else equally ethereal will not care to read what follows. Such a one must first learn something of the elementary relations between life and work with which economics deals.

The economic term "utility," rather than the more general and popular word " welfare," is commonly used in the following pages because the former is well established in the terminology of economics and has a definite special meaning. The relation between the two is roughly indicated by considering the utility of anything as a part or element of that of which welfare is the whole. Incidentally, the concrete utility is thought of more objectively as inhering in goods. Welfare is collective and general and therefore comparatively abstract. At least it is not thought of as limited by persons and conditions. But utility also is general, or generalizable, and only figuratively the "property" of particular goods. We do speak of the utility of goods and of the welfare of men, but this difference of usage may be merely a matter of viewpoint and emphasis.

Welfare, it may be said, is properly a collective term for satisfactory or pleasant states of mind or for such of these as are duly grounded in or accordant with objective conditions, and thus more or less permanent. Since utility is the more objective counterpart of satisfaction, it would seem that welfare is a sum or system, not of utilities, but of the corresponding satisfactions. In other words, if welfare is subjective and utility objective, the latter cannot be described as a part of the former. In fact, however, welfare is not thought of as a merely psychical state or subjective quantity, nor is utility thoroughly and completely objective. Perhaps the variable and seemingly loose use of these words is justified by the parallelism that obtains, in a more general sense than is technically denoted, between the physical and the psychical. Where capacity is so variable

and conditional a matter it may not be possible strictly to discriminate between the capacity to satisfy and the result of the manifestation of that capacity.

It may be said, even by those who acknowledge the interdependence of the two, that welfare is a psychical or subjective quantity and not an economic quantity. Classifications emphasizing exclusion, however, are apt to mislead. Doubtless welfare is primarily psychical. The phrase "an economic quantity," moreover, should be taken in a restrictive sense, leaving some elements of welfare admittedly not economic. For the rest we may insist that whatever is controlled by economic means and regulated by economic motives is in so far economic. A psychical quantity is often in this sense also an economic quantity. Welfare is most certainly an economic matter, though not exclusively such. But welfare is just as certainly not a commercial matter. That is a much smaller circle within the general field of the economic. Commerce and welfare do not have so direct a connection in practice that we must inevitably connect them in thought, though economics is concerned with both.

Welfare may be thought of as either primarily individual or primarily social. That the word tends to connote sociality is natural. Society is a multitude of individuals the well-being of each of whom is dependent upon that of the others. Utility might also be considered a social phenomenon, but in the study of utility we must devote most attention to the concretely conceived good or collection of goods as over against the equally concretely conceived individual or group of individuals. The social viewpoint is therefore naturally pushed forward to another stage of thought. It is not often that the group of consumers is large enough itself to constitute a society. Multiple utility, to be discussed later, is an important exception. But the economist generally leaves the final stage of social synthesis to others.

"Wealth" and "welfare" are correlated with each other.

There is a direct, though not a simple, quantitative relation between them. As a supply or collection of goods, that is, wealth, varies in quantity or content, the utility of the goods to their possessor, their potency for welfare, also varies. The changes in the goods may be either quantitative or qualitative. The correlated variation of utility, at least in so far as economics is concerned, will be quantitative only. The necessary foundation for a theory of economic consumption would seem to be a law or laws of this quantitative variation of utility. We are familiar with one such law, that of diminishing utility. But economists have not paid much attention to this as a phase of economic consumption. They have immediately put the principle to ulterior use for the explanation of value and of market transactions; hence they have failed to give any adequate account of the variation of utility as such. It is the chief purpose of this essay to develop a more comprehensive theory.[1]

There are different kinds of utility and the type of variation is not the same for all. These kinds of utility have scientific interest and social significance apart from the character of their variation. Yet we can scarcely say that anything important about utility is quite unconnected with its quantitative variation. That which is socially significant in the field of consumption must be so in relation to social economy. "Social economy" here means the good management of the material and other means of satisfaction. The clue to good management in consumption lies in the relations between quantity of goods and quantity (or degree) of satisfaction — in just this problem which is to be solved by the formulation and application of the

[1] If circumstances favor the writer's further study of economic consumption, the related topic next attempted will be personal services. This should include some consideration of the general bearings of the distinction between derivative and original income, as well as a discussion of the character and the social reactions of this class of immediate utilities. The scope of the present study is intentionally restricted.

principles of the variation of utility. In this direction, for example, lies the answer to the question as to the effect increased concentration of wealth may be expected to have upon utility and welfare.

That welfare is exclusively dependent on economic factors is a proposition scarcely to be maintained except in a partisan spirit. But it is possible to be equally dogmatic and a good deal more vague in maintaining the extreme opposition of the "materialistic view" of history and life. The moralists have not often conceded to the economists all that belongs to them in the field of the study of welfare, perhaps because the economists have themselves usually been inclined to claim too little here. The latter have been too anxious to steer clear of moral problems. Though welfare is not dependent exclusively on economic factors, it is, let it be repeated, a matter of economics as well as of ethics. That the subject is difficult is no reason why the economists should surrender it entirely to the moralist. The economist should follow his clues wherever they lead.

The argument of this essay does not turn aside when it encounters a problem in morals, but, on the other hand, neither does it attempt to pass judgment. It is intended to be merely a contribution to economic science. If it also has bearings on practical problems, so much the better. But such practical bearings are quite incidental to its main purpose. The writer, however, would not appear to hesitate to draw any legitimate conclusions that follow from the explanatory principles discussed. He does not suppose that, because his purpose is to explain, and not to justify or to rectify, he can therefore avoid moral issues. But he does not undertake to deal with them in the completeness necessary for full moral judgment. To do this it would be necessary to take into consideration facts lying beyond the scope of economic study. Economics cannot claim to see all things whole. If ethics comprehends knowledge of root and all, and if it may thus claim to be entitled to judge finally, then

its students ought to pay more attention to economics than they have done hitherto.

Of the following chapters it is unfortunately true that the earlier ones are the most abstract. They will, therefore, be the least interesting to most readers, and they are also the least significant. Chapters I and II are almost exclusively occupied with the ungrateful task of defining and of qualifying definitions. Chapters III, IV, and VI deal with diminishing utility. This subject has become, as regards its fundamentals, a commonplace of economic analysis. But these chapters do not dwell upon the commonplace phases of diminishing utility and are indeed developed to a degree of abstraction for which the principle excuse is that they thus serve better as a counterpart for what follows. The conception of the nature of saving which is incidentally developed in chapter V is of some independent interest. The three chapters on complementary utility, that is, chapters VII, VIII, and IX, not only correct the ordinary conception of the variation of utility as simply diminishing as the supply of goods increases, but also come fairly close to the concrete facts of life and enjoyment. The next chapters, X, XI, and XII, deal with transputation and present the darker aspect of the interdependence of goods upon one another. If the transputation of utility smacks of pessimism, the theory of adventitious utility, set forth in chapters XIII, XIV, and XV, might well serve as a school of cynicism. Chapter XVI deals with an especially social, some would loosely say "socialistic," phase of consumption and enjoyment. Chapter XVII attempts to gather into one whole the results of the different sorts of variation of the subjective effectiveness of goods for social welfare. The concluding chapter, numbered XVIII, draws the moral. But such practical application is merely an incidental function of a scientific essay, though it is of course more interesting than abstract explanation. These practical conclusions are only briefly touched upon, not fully discussed.

It is the fate of the student of the social sciences to be abstract even where he is least willing to be and where he may perhaps be inclined to ignore the fact that he is so. The writer has preferred to let his abstractness be explicit. One general assumption, however, may well be here disposed of once for all. The variation of utility and the welfare of the consumer doubtless depend quite as much upon the consumer as upon the goods he consumes. And the consumer is a creature of volition. We therefore have to assume that he is on the average somewhat reasonable in his choices if we are to derive general principles determining the variation of utility and the relation of goods to welfare. We assume, in other words, that the painter's pigments must be "mixed with brains" in order to obtain the effects desired and expected. This essay does not undertake to discuss the quality of men, though it is granted that there is nothing of greater importance in relation to the effectiveness of material as well as of immaterial means of welfare. The argument assumes a tolerably good average level of intelligence and self-control. In thus leaving to one side questions as to the quality and variability of human nature, the part exhibits the character of the whole. Economics is not a comprehensive science of human nature and social relations but an abstract study of a certain class of individual acts and correlated social phenomena. The study of economic consumption will naturally avail itself of the same prerogative of being abstract.

WELFARE AS AN ECONOMIC QUANTITY

CHAPTER I

UTILITY DEFINED

Economics is the study of the means of welfare, that is, of goods and services, or of things and processes having utility. Whether utility be considered cause or component of welfare is a question that need not be settled here. An increase of utility normally contributes to welfare. For reasonable beings the more utility there is available, the greater is welfare. The detailed relation between these two variants is the subject-matter of the portion of economics that deals with consumption. The corresponding relation between utility and its physical conditions and causes, similarly considered as variants subject to control, constitutes the field of economic production, including the creation of place- and time-utilities as well as element- and form-utilities. Thus viewed, the study of consumption is chiefly concerned with utility and its variation. The first step in such a study is the definition of utility.

Utility may be defined as the capacity in greater or less degree to satisfy wants. It is a favorable or desirable relation of an external thing or its processes to pleasant or agreeable states of mind. The student of economics does not need to be told that the agreeable and the ornamental possess utility quite as truly as does the "useful." Things having utility constitute as miscellaneous a class of important and trivial objects as can well be conceived. A child's lollipop, a paved public street, a splinter of the "true

cross," a sturdy sunflower, the Koh-i-noor diamond, a glass of lemonade, green and red-flowered wall-paper, a hot bun, a graduation diploma, a waft of perfume, all these yield satisfaction and are included among the things having utility. Peculiarities and limitations of this conception of utility will appear in the course of our examination of its kinds.

The term utility is also used to designate the qualities by reason of the possession of which certain concrete things and acts are constituted goods and services. But utility is predicated of a good or of a service only in relation to human wants and satisfactions, though the latter may be several degrees removed from the primary uses of the object. A good is said to have this or that utility with reference to the wants of some more or less definite person or persons. The relation to the psychical or the subjective is essential to the nature of utility.

It might better be said that a good has *so much* utility. For utility is always thought of quantitatively. There is always present at least an implied or latent quantitative comparison with the utility of other goods. "More" or "less" is the essence of quantitative judgment. This sort of comparison will be made where there can be no absolute and definite determination of quantity.

When reference is made to the utility of a good, the speaker may possibly more or less consciously limit his conception to some one particular use, presumably the most appropriate use to which the good may be put. If one use is exclusive of any other and is exhaustive of the good's power to satisfy, such limitation is inevitable. A plate of hot baked beans serves only one purpose and can be used only once. The utility of a chair is different. It may be used by several persons in turn. Its utility is therefore a multiple of the advantages obtained from it by one sitter. But that is not all. Not to speak of the various more or less reclining postures which the body may assume in a chair, it may be found convenient occasionally to use the chair to

stand on in order to get something otherwise out of reach. The family ironing may be done on a board resting more or less securely on the backs of two chairs. It is perhaps entirely defensible for some purposes to think of the utility of a chair abstractly as proportionate only to the satisfaction to be derived from its primary use for sitting. But the posture for which the chair is built is a merely physical matter. Such a basis would scarcely seem to be the best one for the delimitation of a good's utility as contrasted with the definition of the good itself, the good being merely physical while the utility is a psychical fact. If we pass on to the viewpoint of the less external condition of satisfaction, we find the sitting posture itself has a great variety of uses. After eating one may sit in order the better to digest one's dinner. One may sit in order to write conveniently at a table. One may sit in order to rest one's feet and legs by distributing one's weight over a greater surface. To use the chair to increase one's available height is but a step farther away from its physical design. It is thus most natural to think of the utility of a chair in a collective sense, as incorporating the potential benefits of all the various uses to which it may possibly or reasonably be put. Is some single one of the multifarious uses to which a boy's jackknife is put the correct index of its utility? The use of a needle as a surgical instrument or of a bent pin for fishing may sometimes prove to afford no small contribution to utility. Indeed utility is ordinarily collective. Throughout this essay, unless otherwise indicated, the word is employed in this collective sense. If the consumer can add to or better the conventional and accepted uses of a good, he thereby increases for himself its utility.[1]

[1] The Austrians think of varied possibilities of use as alternative and exclusive instead of supplementary. Cf. Böhm-Bawerk, *Positive Theory of Capital* (translation), 1891, book III, chap. VII. But in the case of most durable goods the uses are actually in the main supplementary to one another, not exclusive. It is only for processive uses (cf. chap. V, below) that the other view holds.

A particular species of utility, thought of as characteristic of some one kind of good, is likewise potentially collective, even though the species itself be so narrow as ordinarily to refer to but one use of the good. The rest-giving utility of chairs, the warmth-preserving quality of bed-blankets, the "soporific virtue" of opiates, all seem narrowly limited, yet each is collective of various possible uses. The lounger's "pipe dreams" and the convalescent's recovery of health are not closely related, but the same chair may be the instrument of both. Though a highly specialized civilization makes us ignorant of many of the possibilities of a tin can, it may be put to many other uses besides that of a water-tight or air-tight package. Even its uses as a mere container are multifarious.

There is a species of utility which, because it is so thoroughly psychical in its nature, is narrow enough to refer to only one kind of use, though one to which almost any sort of good may be put. This distinctive and subjective species is adventitious utility, to the consideration of which several of the following chapters are devoted.

"A utility" is often spoken of as equivalent to what we have called a use. In this sense the utility of a good is the algebraic sum of its practicable "utilities," in so far as they do not interfere with each other. Where two uses are exclusive of each other, as in the case of alcohol to be used either medicinally or for combustion, the preferred alternative use is the one to be included.

Although, owing to the tendency to differentiation and specialization in any considerable stock of goods, auxiliary uses are ordinarily of little account, the purchaser nevertheless judges a good synthetically, that is, with reference to all the uses to which he may care to put it. The skill of the retailer consists largely in calling to the buyer's attention the auxiliary utilities which the latter is getting, or in concealing auxiliary disutilities, until the sum of positive

utility appears to the buyer to mount well above the margin, and so the purchase is made.

As above remarked, if the consumer can add to or better the conventional and accepted uses of a good, he thereby increases its utility. The discovery of such different and new uses is one of the great progressive factors in consumption. It is much more important than the refinement of sensibilities that makes the connoisseur. The latter's consciousness of scarcely perceptible differences has the same sort of relation to wholesomeness and progress in consumption that the development of athletic contests has to health and eugenesis among the people, the correlation, so far as there is positive correlation, being in both cases quite indirect.

Since it is chiefly the quantitative aspect of utility with which we are to deal, we cannot well stop at a qualitative definition. We must have a measure of utility, at least for the purposes of our thought.

In the writer's conception, utility is proportioned to satisfaction. The utility of a good or supply is proportioned to the sum of satisfaction obtainable from the different uses to which it will be put. This proposition, however, is not to be taken without qualification. There are things which will be accepted in lieu of satisfaction, certain peculiar kinds of utility being thus constituted. From this broader viewpoint, therefore, contribution to satisfaction or what will be accepted in lieu of such contribution, is the conceptual measure of utility.

The proposition that quantity of utility is equal to quantity of satisfaction requires only such qualification as results from the generalized nature of utility.[1] Satisfaction that is due to the idiosyncrasy of some one individual is, of course, not a sufficient foundation for a corresponding

[1] Substantially the point made by Seligman, article on "Social Elements in the Theory of Value," *Quarterly Journal of Economics*, vol. xv, 1900–01, p. 321.

quantity of utility. The satisfaction must be susceptible of being experienced by others. Only so could utility be subject-matter for a social science.

The generalized character of this satisfaction suggests the solution of another troublesome question. Is utility in proportion to experienced or realized satisfaction or to adjudged or expected satisfaction? It is, of course, in individual cases far from being exactly in proportion to either. It is in proportion to reasonably expected satisfaction. But such expectation is substantially identical with what has, in general, been experienced, and thus with what will, in general, be experienced. Barring accidents, and possibly allowing for the approximate nature of human notions of quantity, generalizable experience and reasonable expectation are the same. Utility is fundamentally a relation of goods to satisfaction, but, as a quantity, it is also incidentally a judgment of that relation.

There is to be observed an occasional inclination to confuse utility and subjective value, with a resulting tendency to perceive only such utility as is proportioned to marginal satisfaction, that is, the satisfaction afforded by the least esteemed use to which any portion of the supply of a commodity will be put.[1] This goes against many ob-

[1] The reference is especially to F. A. Fetter, *Principles of Economics*, p. 26, as follows: "'Total utility' . . . if it has any existence, certainly cannot be calculated. The diagram showing the curve of diminishing utility must be understood as representing indicatively at any given moment but one marginal utility, the same for every unit of like goods. The other perpendicular lines are expressed in the conditional mood; they are what the marginal utility would be were the numbers of units different."

Contrast this with Jevons, *Theory of Political Economy*, 2d ed., p. 56: "We may know the degree of utility at any point while ignorant of the total utility, that is, the area of the whole curve. To be able to estimate the total enjoyment of a person would be an interesting thing, but it would not be really so important as to be able to estimate the additions and subtractions to his enjoyment which circumstances occasion." On p. 87, Jevons identifies value in use with total utility. This would not be inconsistent with the employment of the term in a representative sense in relation to a single article, in fact as synonymous with utility.

vious facts. Some articles of consumption — for example, a piece of furniture such as a piano or a cook stove, of which a family ordinarily possesses only one instead of having a supply of several similar units — commonly have utility clearly greater than their value.[1] On the other hand, if, under certain conditions of supply, the least important use to which a good will be put has no appreciable positive utility, but is merely the care-free wasting of it, such a good's marginal utility is *nil*. But goods without marginal utility are not therefore divested of all utility, else we must deny that such goods, which are free goods by reason of the abundance of their supply having given them a zero marginal utility, are goods.[2] But to be a good and to have utility are coextensive propositions. Things having marginal utility constitute a less extensive, included class. Similarly the marginal utility pertaining to the individual good thing may easily be much less than the whole utility of the article in question. Moreover, if we must confine our thought to marginal utility, or to the utility corresponding to that

[1] Wieser, *Natural Value*, book I, chap. VIII, discusses what appears to be a similar case, but a closer examination shows that he is treating of the economic value (not the utility) of goods that are *dealt in* as indivisible wholes, not those that are such for purposes of consumption only.

[2] Menger, *Grundsätze der Volkswirtschaftslehre*, 1871, p. 83, says: "Die nicht ökonomischen Güter haben demnach nicht nur keinen Tauschwerth, sondern überhaupt keinen Werth, und somit auch keinen Gebrauchswerth. . . . Der Tauschwerth sowohl als der Gebrauchswerth zwei dem allgemeinen Begriffe des Werthes subordinirte, also in ihrem Verhältnisse zu einander coordinirte Begriffe sind, und demnach Alles das, was wir vom Werthe im Allgemeinen sagten, eben sowohl vom Gebrauchswerthe als vom Tauschwerthe gilt." But it is evident that *Gebrauchswerth* is not here used as the equivalent of Adam Smith's "value in use."

The formally logical phrasing of the passage from Menger is not convincing, since it does not reckon with the fact that value is a very broad genus, of which economic value, whether exchange value or subjective economic value, is but a species. To say that water, or that a pail of water just drawn to sprinkle one's flower bed, has no value in use, because one can get water, or another pail of water, for the trouble of turning a faucet, seems to the writer contrary to the sense of the English words and contrary to common sense.

which results from the least important reasonable use or set of uses for any unit of the available supply, we deprive ourselves of any standard of comparison not varying arbitrarily with the pecuniary means of individuals, since available supply varies with purchasing power. The *marginal* utility of a pair of shoes or of a pound of candy varies from individual to individual as much as does the utility of a dollar. But the utility of shoes as such or of candy does not so greatly vary, because the satisfaction they afford, aside from idiosyncrasies of taste, varies comparatively little.

This proposition as to the feeling equality of different individuals requires explanation and delimitation. Doubtless sensibility, as evidenced by central feeling or affection, as well as with reference to pain stimuli, varies greatly from human individual to human individual. Therefore, it would be well to compare the feeling experiences of two individuals by reference to the relative position or rank of the feelings rather than in terms of measurement units. Probably we should never attempt to assign absolute values to the degrees of feeling of different individuals. But whether this holds or not, it greatly simplifies comparison to assume that the correct method is to equate the zero-mean or point of indifference of one individual's scale with the similar zero-mean of a different individual, other points being compared by way of relative distance from such means.[1] The proposition above enunciated supposes merely that the satisfactions of different individuals should be thus compared according to relative position, that is, as first, second, third, etc., or in a percentile scale.[2]

Just wherein and why the higher ranges of the utility curve are peculiar and are intractable to current conceptions is considered in chapter XI, below, on the transputed character of the initial utility of necessaries, and, though less

[1] This question comes up again at p. 176.

[2] Or by way of the terms of a binomial expansion.

directly, also in chapter XIV, on the economic status of adventitious utility.

The absence of definite allocation of the utility that is in excess of marginal utility to one or more specific units of the supply causes such utility to be often ignored and sometimes entirely neglected by economists. We shall later see that the utility due to the suitable grouping of articles of consumption is little regarded for the same reason, because this species of utility also is not clearly and certainly the property of one concrete and definite good. But these utilities exist, whether amenable to commercial valuation or not. If a particular supply is reduced to a single unit, its utility clearly need not be merely marginal for its possessor. It often is much greater than what corresponds to the price he would have to pay for it. Yet the fact that there are several units can scarcely be supposed to destroy whatever is in excess of the marginal element in the utility. Super-marginal utility remains utility, and is often the most fruitful or effective part of utility.[1]

[1] Having in view the essential character of the phenomena of utility, one would rightly expect that "effective" utility would mean utility that is effective for satisfaction. But in his *Essentials of Economic Theory*, p. 7, Professor Clark makes "effective utility" mean utility that is effective for the determination of economic value. The analogy of "effective demand" explains this. But utility looks to satisfaction, not, as does demand, to the market. But, as is here curiously illustrated, the attention of economists is not easily attracted in that direction.

CHAPTER II

THE SPECIES OF UTILITY

The character of utility partakes of both the objective and the subjective. Hence it does not appear at first glance whether it can be subdivided into species. Objects and events that have utility are multifarious. Subjective satisfaction, on the other hand, is of homogeneous substance. It is doubtful if we can at all divide and classify satisfaction as such. But we can deal with sources of satisfaction with reference to psychical effects as well as with reference to physical qualities, and therefore we can divide or classify utility. Though satisfaction is one, relations to it, or the sides from which it can be approached, are many. The same substance may be cut into many different sizes and shapes.

There may be several classifications of the same group of things, all quite "natural" or organic in character. Thus utility is susceptible of more than one significant division. Some familiar ones are as follows: —

Utility is positive or negative. Negative utility is the tendency to cause detriment or to detract from enjoyment and is usually distinguished as "disutility."

Utility is marginal, super-marginal, or free — ideas to which the reader has already been introduced. The first is the utility corresponding to the least important reasonable use or set of uses for a unit good under given conditions of supply. Wants remaining constant, any unit of a given supply has the same degree of marginal utility as any other unit.

Some units, though their physical identity cannot be fixed, have more than this degree of utility. The excess is

super-marginal utility. If we wish to distinguish other than marginal units of the supply as intra-marginal, then intra-marginal utility would be the utility individually and collectively possessed by these units. The amount or degree of utility possessed by one or more of such units in excess of that of the marginal unit is super-marginal utility.

Free utility is the utility of free goods, which are those whose supply is so abundant relatively to wants that their marginal utility is zero. It might be considered a special case of super-marginal utility, that is, the case where marginal utility is zero, but the fact that the one relates to economic and the other to free goods makes it important to have separate and distinct terms.

Utility is direct or indirect according to whether the good's capacity to satisfy is ripe and ready or whether the good is appreciated as a means to the creation of other objective conditions of satisfaction rather than for itself. Coal can directly affect one's enjoyment negatively by soiling things, indirectly and positively by being used to create warmth. The utility of the same object may be more indirect or less indirect, according to its destined use; the coal, for example, according to whether it is used as domestic fuel or as the source of power for a mill. The same distinction is often indicated by the words immediate and mediate or intermediate. These classes of goods are also distinguished as of first order and of higher or remoter orders.[1] An especially important phase of this distinction relates to the possibility of exchange, by way of which a good has an indirect utility corresponding to what it will fetch in exchange for money or other goods.[2]

The above are of course cross-classifications or sub-

[1] Menger, *Grundsätze*, p. 8.

[2] Jevons (*Theory of Political Economy*, 2d ed., p. 76) would confine "indirect" to this sense and relate "mediate" utility to the stages of the productive process. But it is doubtful if such a distinction can be established as usage, even as technical usage.

classifications, each of great value for particular purposes. Below are introduced certain further classifications which are as important as those just mentioned. It will be necessary, incidentally, to use and to define certain new terms. It would be well for the reader to bear in mind the fact that the definitions which take up the remainder of this chapter serve chiefly to introduce certain concepts to the understanding, whose significance can be fully appreciated only after reading the chapters to follow.

The consumption of a good may be related to the satisfaction of wants in a threefold way. The good may possess qualities which are wanted for themselves. The relation is then simple and direct between the qualities of the good and the wants of its consumers. But the relation may be of a more complicated sort, not adequately accounted for in this manner. The good may be wanted for the sake of conjoint consumption with some other good. So far as this holds, the relation of the good to another good is the critical factor in its utility and value. Of course the relation to wants continues to be fundamental; but it is overshadowed in the case of the part of the utility that depends on joint use. Still a third relation may dominate choice to the neglect of the other two. A good may be bought or consumed merely or chiefly on account of its bearing on the relations of its possessor or consumer to other members of society. The good may be a means of social distinction and may be appreciated for no other reason. Here the relation of the consumer to other men is the crucial point. The relation of such utility to satisfaction is derivative.

These three viewpoints suggest the essence of the classification of utility of which most use is made in this essay.

Utility proper is due to the intrinsic qualities of a good, or group of goods, with reference to its relation, including the quantitative relation, to the satisfaction of human wants.

If the good is used by itself, and if its degree of utility is

not economically dependent upon associated or joint use with other goods, its utility is altogether *particular*. Particular utility belongs to a good apart from its consumption groupings. It is not derived from the group relation.

If the utility of a good is in part due to association with other goods in consumption, the utility is in so far *complementary*. Such complementary utility of a particular good is a portion of the utility proper of the complete group to which the good belongs. Complementary utility is subject to the influence of shiftings and rearrangements among consumption goods. Its distribution among the members of the group is also ordinarily indeterminate. But, as merely complementary utility, it is at any rate not noticeably centered upon or monopolized by one or a few members of the group.

These definitions may appear to be open to objection on the ground that they wrongly assume that a thing can have utility independently of its relations to other things. All utility, according to a possible interpretation of the definitions, is complementary. For example, the utility of the air or of its oxygen depends on the presence of combustibles in the body, and also the oxygen must be mixed with nitrogen to dilute it for breathing. Conversely, the utility of food and of all other goods depends on the supply of air for breathing. This objection is perhaps best met on the practical ground that, as a matter of ordinary experience, many such things will be available without care and may be assumed to be available as a matter of course. They need not be sought out or thought of, and their relations to the satisfactions obtainable from other things will not ordinarily need to receive any consideration. But the writer does not wish definitely to confine the applicability of this classification of utility to technically economic as distinguished from free goods.

Circumstances may be such as to concentrate attention on one member of a group of goods. It may be obtainable

only on condition of imputing to it more than its proportion, possibly all, of the non-particular utility of the group in which it is to be used. This case may be distinguished as transputing utility from the less regarded to the favored one among the complements. In the later years of the First French Empire the utility and value of gunpowder was mainly imputed to saltpeter because, with foreign supplies cut off, this ingredient was especially difficult to get. *Transputed utility* is due to a relation to other goods such that their full use and enjoyment is felt to be practically so thoroughly dependent upon the control of the good in question that its utility is exalted and theirs depressed. Utility, or more utility, is transputed to the rarer complement in amount greater than would be attributed to it because of its other uses or merely for its own qualities. Instead of being shared proportionately, the complementary utility of the group (a part of the utility proper of the group) is chiefly or exclusively credited to one of its members. Transputation is a sort of monopolization of complementary utility, its abstraction from other complements and concentration on one. "Transputation" conveys the idea of such a carrying over or transference of attributed utility.[1]

The term "transputed" itself suggests the close relation of the conception to that of imputation,[2] so familiar to students of Austrian theory. Transputation is a special case of imputation. Though properly more general, the idea of imputation, as it has in fact been used and may well continue to be used, does not look beyond value to the utility that is its foundation, while transputation refers chiefly to utility and consumption. The Austrian theory of imputation assumes that utility has no practical significance apart from value, while the conception of transputation

[1] The term has been adopted, after much unavailing effort to find a better one, at the suggestion of Professor Johnson.

[2] Used by Smart to translate the German *Zurechnung*.

recognizes the coördinate contribution of various members to a group-effect, and considers the concentration of group utility and value exceptional and its equitable distribution normal. All complementary or non-particular *value* is imputed to group members, while transputed *utility* will seldom thus absorb all non-particular utility and may not be distinguishable at all. The one rejects while the other accepts the idea that the concentration of value by imputation does prejudice to other coördinate elements involved, though this difference may be due entirely to the difference between intermediate goods, so conspicuous in Austrian theory, and the immediate utility affected by transputation. Imputation relates to the attribution of value in production and distribution. Transputation is a result of the complementary relation in its bearings on economic consumption. Some further attention is given to the terminological question in a later chapter.[1]

Transputed utility is a result of the complementary relation plus relative scarcity of one or more of the complements. This relative scarcity is a matter of the quantitative relations between the supplies of the different goods involved, and is to be distinguished from that scarcity which is the basis of marginal utility, the latter sort of scarcity being a matter of the quantitative relation between supply and recognized need.

Non-particular utility proper is thus divided into merely complementary utility, or untransputed complementary utility, on the one hand, and transputed utility on the other. When the non-particular utility is equitably attributed to each member of the group, it is merely complementary. When one complement by force of circumstances gets more than its share, the non-particular utility is transputed in whole or in part.

Utility proper includes ordinary complementary along with particular utility, but transputed utility relates to a

[1] Chap. x, footnote, p. 116.

different set of circumstances or a further removed point of view. The latter may be founded upon the larger complementary relation between all the goods or experiences of a life. These are not subject to individual control or direction, and therefore not of practical economic interest. Untransputed complementary utility, on the other hand, is chiefly of significance for the smaller groupings of daily practice. The larger scope of the relation is not ordinarily given attention or else is problematic. The group within which utility is transputed is often more extensive than the particular goods occupying the attention, as in the case of the occasional excessive utility of necessaries discussed in a later chapter.[1] In order that there may be transputed utility, it is true, there must be some group relation further on — some group the utility proper of which is the ultimate ground for transputation. But the connection may be effective through instinct and need not be the subject of conscious and rational economic judgment. The classification of utility as either transputed or else proper applies in strictness only for coördinate goods, the proper utility in question having nothing to do with that more or less indefinite relation of dependence which is the basis of the transputed utility. The transputed utility of a good is not to be set over against the proper utility of the group to which the same good belongs, but over against that of other members of the group, the utility of the group as a whole being on a different level. From the standpoint of terminology it might be preferable to oppose transputed and particular utility but for the fact that transputed utility need not absorb all the non-particular utility in the group, and because of the larger groups from which transputed utility may be derived. Particular and complementary utility, proper and transputed utility, have different limits and different division lines, except that all are contained within the limits of the utility proper of some

[1] See Chap. XI.

group. The complementary relation and the utility due to it are the basis of imputation and transputation. But complementary utility is usually super-marginal and often free, while transputed utility is always economic value, and follows laws of value, and not merely, or even principally, those of utility as such. But we must postpone further treatment of these rather complicated relations to later chapters.

Utility may be classified on still another basis as either adventitious or non-adventitious. The writer can find no better term for the latter than utility proper.

Adventitious utility is not due to the intrinsic qualities of the object nor to its complementary relation to other goods, but to a conventional social significance, in the view of the possessor and others, attaching to the possession and use of certain goods. Adventitious utility is due to relations between persons, and finds its expression, rather than its habitat, in the valuation and use of goods. This social significance of expenditure and consumption upon which adventitious utility is founded is not analyzed and thought out, or even thought of at all, by those who are active in its exploitation. It is conventional in nature and might be designated "conventional" utility but for the too general use and too broad implications of the word. Reflective analysis on the part of the consumer would usually be fatal to adventitious utility.

Adventitious utility may also be complementary or transputed. But the complementary relation here reveals nothing new. Transputation, moreover, is unimportant in the field of adventitious utility, since the psychical character of the latter is very simple and at the same time, in its particular external expression, very fragile. Hence it cannot bear the strain of complex transputation, which is likely to initiate rational analysis and questioning.

It is in connection with adventitious utility that the social or socio-psychical factor in consumption is especially

prominent. The material for a comprehensive analysis of utility, therefore, or for a study of its variation, could not be supplied by the experience of a Robinson Crusoe. The adequate study of consumption is a task of the social sciences.

Neither transputed nor adventitious utility can be possessed by free goods. Both are dependent upon the limitation of supply which creates economic value.

Another classification of utility is based upon the reaction of use and enjoyment upon a good's power to satisfy. If the furnishing of the satisfaction depends upon processes in the good which destroy its utility, that utility may be distinguished as *processive* in character. If the mere existence and presence or the spatial relations of a good give satisfaction without involving impairment of its utility, the utility may be called *existential*. By reason of the processes whose occurrence or absence is in question, the good becomes or tends to become a different kind of thing, that is, not a good or less a good. In production the processes run the other way. In neither case can their direction be misunderstood. The importance of the distinction between these two classes of utility for economy in consumption is evident.

There is another sort of utility, somewhat analogous to existential utility. The latter affords enjoyment to an individual many times in succession without any loss of its power. Certain goods, largely identical with those possessing existential utility, and certain services may, without detriment to their utility, be enjoyed simultaneously by many consumers, instead of exclusively by one individual at a time. This is the case of *multiple* utility.

We may briefly summarize as follows the relations between the various species of utility discussed. To be distinguished from utility proper is adventitious utility, the former being based on the relation of the qualities of goods to men, the latter on the qualities of men and the relations

between them. In contrast with utility proper from another point of view is transputed utility. Complementary utility as such is a species of utility proper. From the point of view of the complementary relation, utility proper may be divided into particular and complementary utility. The complementary relation is also the basis of transputation, but transputed utility is different from merely complementary utility in being value as well as utility and in being more or less monopolistic. Existential and processive utility are the terms of an independent cross-classification, significant in relation to the reaction of consumers upon goods.

CHAPTER III

THE LAW OF DIMINISHING UTILITY

It is too often assumed that the diminution of utility — sometimes without regard to regularity in the rate, sometimes with the implication that diminution proceeds at a diminishing rate [1] — is the one and only law of the variation of utility. The writer does not deny the importance of this principle or even its primacy. He does believe that economists have in general been in too much haste to state the "conclusion of the whole matter" and so have left out of account everything but the final stage of the variation of utility. They have assumed that the principle of diminution was universal and have not inquired into conditions. But they have at least made it unnecessary to argue and illustrate the fact of diminution of utility. We shall therefore consider the principle first with reference to the differences between it and the conditions it presupposes on the one hand, and the conditions and principles of other kinds of variation of utility on the other.

A suggestion of the principal condition to the diminution of utility is contained in the very word "supply." The utility — of course the marginal utility, since the uses of units well within the margin are ordinarily not affected by extension of the supply — of a unit of a good whose supply is changing diminishes as the supply increases, and increases as the supply diminishes. But can we, in conformity with the sense of this proposition, speak of a supply of such a miscellaneous class of commodities as, for example, food or clothing? If an inhabitant of a northerly climate has a supply of clothing consisting of one coat, what will be the diminution of utility accompanying his acquisition of another article of clothing, say a pair of trousers? Or

[1] For the position of various economists as regards this point, see the footnote on p. 24, below.

suppose he receives successively hat, coat, trousers, and shoes, is the principle in operation that of diminishing utility? Certainly that principle is somewhat obscured, and if so the reason must be because the conditions for its operation are not favorable. That is to say, contrary factors with their different principles are at work. How these different principles work is described in later chapters to which the present discussion is a foil.

The problem suggested by the above illustration may be met by sharply defining the term supply. The units of a supply must be like one another. They must be so much alike as to be interchangeable, sometimes perhaps indistinguishable. The principle of diminishing utility is operative without qualification only in the case of homogeneous goods. To avoid ambiguity it might be well to use the phrase homogeneous supply when discussing diminishing utility. But "a supply" is usually intended to mean just that.

Since by hypothesis the character of the good does not change, the reason why the utility of successive units of a homogeneous supply of goods diminishes must be sought in the nature of man. The reason is the diversity, we might say the versatility, of human wants. There is a best use to which a particular kind of good may be put and a single available unit will be put to that use. Both reason and instinct require the application of a good to the satisfaction of the strongest desires or elements of desire first. Added units will be successively applied to uses for which they are less needed or less well adapted. The most important class of uses of wood is for the parts of furniture and implements. Next, ranks its use for the floors and interior finish of houses. In America lumber has until recently been so cheap that, except under special conditions, houses have usually been constructed entirely of wood above the foundations. Where wood is the available fuel this use ranks next. Buildings to house cattle are of less direct human

interest. Whether crops also are to be completely housed when harvested is not of so decisive importance as to make barns generally adequate to this use, even where lumber is very cheap. The burning of timber merely to make potash is no longer a recognized industry. The distillation of wood to obtain alcohol is a low grade of use applicable only to what are in effect wood residuals. Of course there are within each of these uses or classes of uses all gradations in the importance of individual uses to which particular articles are put. Human ingenuity will continue to find uses for a large supply of material or a large number of articles of quite the same kind, but uses in which the units of the supply are, under static conditions, less and less effective.

Subjectively considered, it might be questioned whether two articles are ever put to quite identical uses. The first and the second pieces of bread do not satisfy exactly the same kind of want; they do not produce exactly the same sort of satisfaction in a hungry man. It is hardly possible that two meals, though they be objectively identical in every particular, be quite the same to the consumer. It is only because we discriminate desires by their objects that we are likely to think of a particular kind of good as satisfying always the same sort of want. The utility of a supply of goods is in its very nature compounded of many uses. Want and demand are always composite, varying, kaleidoscopic.

Owing to the considerable degree of interchangeability of goods and to the diversity of their groupings in consumption, the application of later units of a supply is likely to be to uses or desires objectively distinguished as of a different kind from those to which earlier units are applied. Some corn may be used for hominy pudding and for johnnycake. Some will feed the chickens and thus supply eggs and poultry for the table. Some is reserved for seed. Some becomes proprietary breakfast food. Much goes to the

production of pork and much is fermented and distilled to become whiskey. Some becomes the starch in our collars and some makes glucose and syrup and candy of low grade.

This diversity of wants and uses, including in increasing proportion new kinds of uses and future uses, to which an increasing supply of goods is appropriated, becomes greater as the good becomes more easily obtainable. It is owing to this fact that the diminution of utility proceeds at a diminishing rate. The curve of utility, or of demand, that is, demand for consumption as distinguished from demand for exchange, is regularly bent more and more away from the vertical. It is concave. This concave character is a result of the stimulus which the increase of means imparts to the expansion of wants.

The proposition that the diminution of utility proceeds at a diminishing rate is one of those very general facts that would be recognized as common sense if it could only be stated in unmathematical terms. But exact language, and the abstractness of conception that is its necessary condition, is repellant. The point is simply that the diversification of uses of an increasingly abundant supply will ordinarily or regularly be increasingly rapid as the supply of an article, and the ease with which it is obtained, increases. The number of distinguishable uses will therefore increase at a greater rate than in proportion to the increase in the amount of the supply. If apples at $3 a bushel are reserved for a single use (or a single dozen uses), but will have two uses at $2, they will not have merely three at $1, or four on becoming free goods, but certainly more than in the proportion indicated. Every downward step in difficulty of attainment that is of equal absolute importance will be increasingly effective in promoting the development and application of new uses. On general grounds, that is, because of the fundamental attribute of human nature according to which attention and thought run in terms of relative quantities, equal

relative steps are much more likely to be of equal effectiveness.

The law of diminishing utility exactly expressed implies, not mere diminution of utility as supply increases, but diminution *at a diminishing rate.* Some economists accept this implication. Others, by their manner of drawing the curve or otherwise, show that they have in mind only the less definite concept.[1] By the law of diminishing utility,

[1] Marshall's statement is: "The one universal rule to which the demand curve conforms is that it is *inclined negatively* throughout the whole of its length" (*Principles of Economics,* footnote on p. 160 of the 1st edition; p. 99 of the 5th edition). In order to simplify things we may take this as referring to the demand curve of an individual, which is in the form the same as his utility curve. If the word supply may sometimes be taken in a loose enough sense to include goods bearing in some degree a complementary relation to one another, the statement quoted claims too much. Cf. chapter IX, below. If it be taken to refer to particular utility only, it explicitly avoids being as definite as it might be. But Marshall's utility curves are drawn as continuously concave.

Jevons's practice (*Theory of Political Economy*) also conforms to the assumption of diminution at a diminishing rate. The same, on cursory examination, appears to be true of Walras (*Éléments d'économie politique pure,* 1874). The Austrians do not employ graphic methods of exposition, hence it is not easy to say what course they would ascribe to the variation curve, if they were interested in it. The greater number of economists are, for the same reason, not specific on this point.

On the other hand, Professor Patten, as cited on p. 39, below, illustrates the possibilities of an entirely arbitrary handling of the form of the curve. Professor Fetter (*Principles of Economics,* 1904, p. 24) makes the curve convex at its lower portion. There are other cases where the curve is allowed to cut the base line, but this is of little importance if its concavity is maintained.

A conspicuous but rather ambiguous case is that of Professor John B. Clark. His utility curves are in general concave throughout their length. But on p. 222 of his *Distribution of Wealth,* the horizontal summation of convex curves is made to yield a concave curve. On p. 225 there is a similar convex curve. This may be explained as due to his attempt to deal with utilities that are absolutely alike. He says: "Of a series of utilities that are exactly alike, the first is measured by a positive quantity and all following ones by negative quantities" (pp. 231–33). The writer's position, as explained in chapter IV, is that the homogeneity postulated for diminishing utility is entirely an affair of goods and not of wants, and also that time of consumption should not be thought of as restricted to the present. But it is of some interest to attempt to trace the diminishing utility of a quality, instead of a good. The quality, however, should be *objectively* definable.

or of *normal* diminishing utility, — if there is occasion for exactness of expression, — the writer always means diminishing utility at a diminishing rate. We shall shortly see that the conception can be made even more exact and mathematical — and at the same time, of course, more abstract and restricted as to its practical application. In any case the comprehensive conception of the variation of utility must provide for other principles of variation and for other forms of the curve of variation.

The apparently convex form of the curve of diminishing utility at its lower end, or its more rapid decline and abrupt termination, is not contradictory to the principle of decline at a diminishing rate. The perishable character of certain utilities, together with the limited capacity of corresponding appetites, produces the phenomena of saturation for the consumption of certain goods, for example, ice cream, if time is limited. This fact is in part responsible for a too broad generalization with regard to the lower end of the curve. But the appearance of an abrupt drop may be due also to the influence of indirect costs, accompanied, of course, by the exhaustion of such possibilities of out-substitution — that is, devotion of some units of the supply to purposes ordinarily served by entirely different goods — as will cover these indirect costs. When price becomes almost negligibly small, other elements of cost that are ordinarily themselves negligible, such as the cost of going to the place of sale, of calculation of utility, of bargaining, of devising new uses, of caring for a supply for the future, etc., outweigh the marginal utilities which have become very small, and put an end to demand. "Enough is enough." At least enough causes inertness. But such an end to the expansion of use does not affect the standing of the general principle of diminishing utility. Economists who represent the curve expressing this sort of variation of utility as normally convex at any part of its length are thus open to criticism. Allowing the curve ever to cut the base line is also ob-

jectionable, though defensible on grounds of convenience.

The effect of neglected costs upon the curve of diminishing utility is shown in Diagram I.

It is possible to give a more subjective or psychological explanation of the phenomena of diminishing utility. It may be said to be a corollary of Weber's and Fechner's law of psycho-physical relations, according to which, in order that the psychical intensity of a sensation may increase at a constant arithmetical rate, the physical intensity of the corresponding stimulus must increase at a geometrical rate.

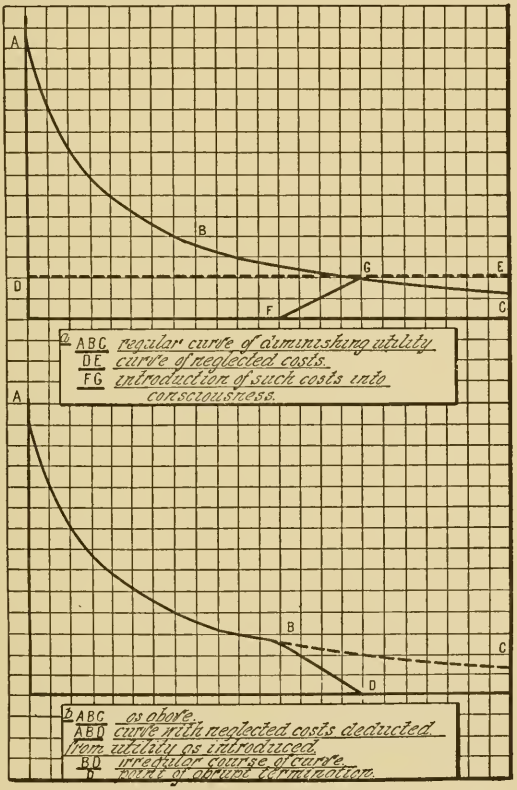
It is to be noted that diminishing utility relates, not to the intensity of sensation, but to its extent, or to the extension of ideas and of feelings of satisfaction accompanying ideas, especially ideas of possession. The supply, moreover, whose utility is felt by anticipation, and judged, need not be in sight. It need only be contemplated quantitatively, as in the case of purchase from a distant store. It is not a matter of course that Weber's Law applies to states so remote from the intensity of sensation following directly upon peripheral stimulation. Nevertheless, the generality of the psycho-physical law is so great that the suggestion of a connection with diminishing utility is not to be scouted.

It is to be observed that, if we can accept the psycho-physical formula, we have thus not merely further support for the principle that utility diminishes at a diminishing rate, but we know the exact form of the normal curve of diminution.

The graphic representation of the relation between the variation of satisfaction or utility and that of the corresponding physical quantity as expressed by Weber's Law requires some use of mathematics. We want a curve showing the derivative variation of utility supposing supply to increase by regular increments. Diagram II is designed to

DIAGRAM I

The apparent form of the curve of diminishing utility when account is taken of such costs as are neglected until marginal utility is small



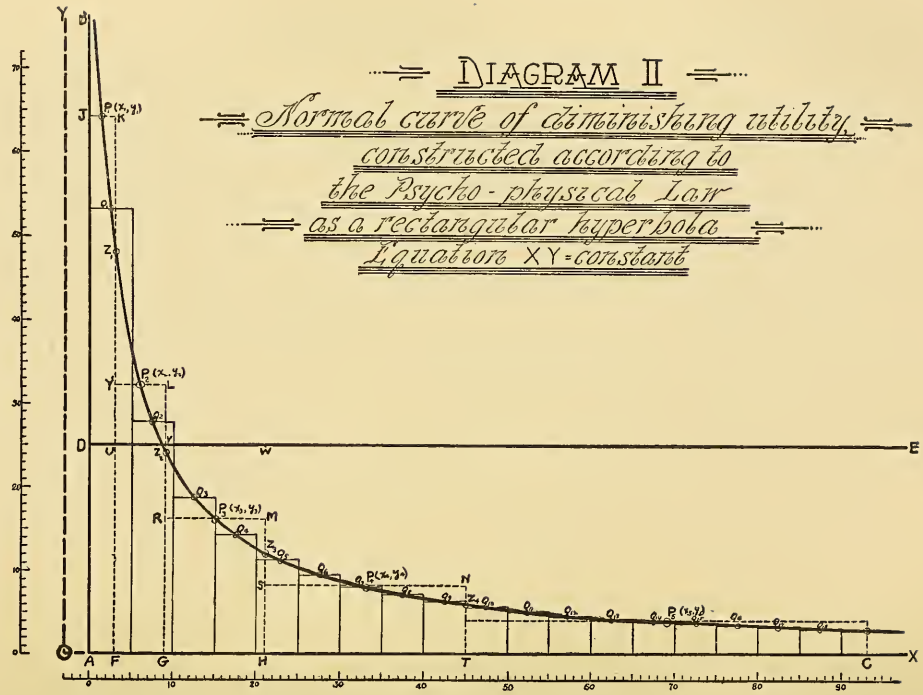


DIAGRAM II

Normal curve of diminishing utility, constructed according to the Psycho-physical Law as a rectangular hyperbola

Equation XY = constant

show both the form of this curve and a method of constructing it.

In this diagram AB represents the vertical line of reference and AX represents the horizontal line of reference or base line. The supposition that the increments of physical supply are continuous and of equal size is represented by drawing the horizontal straight line DE, beginning at the vertical line of reference (the origin of the supply), to the left and equidistant from the base line; that is, DE is parallel to the base line. The rectangular area subtended by any given segment of DE beginning at D represents supply at the given stage of its development. The quantity of the supply is shown by the horizontal scale, but whatever happens to be the economic unit of supply may be represented by any definite length on the scale.

The value assigned to DA, as well as to any unit of the supply area, is arbitrary, and any convenient constant may be used. We may reduce this constant DA, and thus the area upon which it depends, to as small a figure as we will without affecting the purpose of the diagram. Also, mere units of length along the base line may thus adequately represent supply. Indeed, this is the usual method with diminishing utility and demand curves.

We may make any convenient supposition as regards the psychical effectiveness or utility of the first increment of supply. In order to show the mathematical relations between physical and psychical quantities, the latter will be plotted with reference to the same lines (AB and AX) as the former and its quantity at successive stages of the development of the physical supply will likewise be represented by an area subtended by a curve whose position has a mathematical relation to AB and AX which we are to determine. For the first unit of supply we may assume a psychical effectiveness corresponding to the area of the rectangle $AFKJ$. We may further assume that the psychophysical relation obtaining here causes a decline of the

psychical effectiveness of the successive units of supply such that, in order to produce a second psychical effect or amount of utility equal to that corresponding to the first unit of supply, the second increment of supply must be double the first. Likewise, the third increment of supply must be double the second to be equally effective, and so on. In other words, in order that the increments of utility be constant, the increments of supply must form a geometrical progression, whose ratio (constant multiplier), in this case, is $\frac{1}{2}$. This use of the geometrical series conforms to the quantitative relation between any two pairs of successive increments of utility and supply according to the psycho-physical law. Therefore, if —

supply rectangle *AFUD* corresponds to the utility rectangle *AFKJ*
then " " *FGVU* " " " " " *FGLY'*
and " " *GHWV* " " " " " *GHMR*
and so on.

Each successive quantity of utility requires a supply increment twice as great as that which produced the preceding equal quantity of utility. These utility rectangles are shown in the diagram by fine dotted lines.

It may be well to note here that the areas representing supply and utility, respectively, in this diagram have no necessary or determinable ratio to each other at any stage of their development. The two areas are incommensurable with each other. Only their variations, the successive increments of the subtended areas, are susceptible of quantitative comparison.

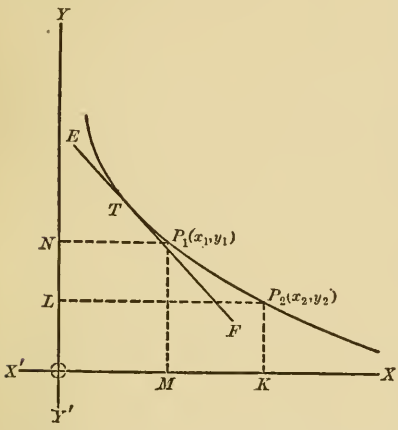
The problem now before us is to derive and plot a curve determined by these utility (dotted) rectangles. This curve must pass through the centers of their upper sides, P_1, P_2, P_3, P_4, and P_5. But the number of the points thus determined is too few and their intervals too variable to define a curve sufficiently for ordinary graphic purposes.

The curve passing through these points is what mathematicians call a rectangular hyperbola. We need not here

undertake a demonstration of this fact.[1] The equation of a rectangular hyperbola is $xy = c$. What this means is that x, which is the distance of any point on the curve from the

[1] To such readers as may be prepared and inclined to go into the mathematical proof of the above proposition the following demonstration is offered. For it the author of this essay is indebted to Mr. L. H. Lubarsky.

Preliminary Propositions. Certain fundamental terms of analytics pertaining to rectangular coördinates are illustrated by the accompanying figure: —



Let $X'OX$ and $Y'OY$ be two straight lines intersecting at right angles at O.

$X'OX$, the horizontal line, is called the axis of abscissæ or the axis of x.

$Y'OY$, the vertical line, is called the axis of ordinates or the axis of y.

$X'OX$ and $Y'OY$ are together called the rectangular axes of coördinates.

O, the point of intersection of the axes, is called the origin.

If P_1 is any point on the curve, and P_1M is drawn perpendicular to $X'OX$, and P_1N perpendicular to $Y'OY$, then

OM $(= P_1N)$ is called the abscissa or x of point P_1.

ON $(= P_1M)$ is called the ordinate or y of P_1.

OM and ON are together called the coördinates of the point P_1 or the x_1, y_1 of the point.

Every point is given by its coördinates x and y. The abscissa of the point is written first and is represented by some x with a subscript, and its ordinate second, represented by some y with the same subscript. Thus, for point P_2 (x_2, y_2), x_2 denotes the abscissa of P_2, which is the line OK, and y_2 denotes the ordinate of P_2, which is the line OL.

Each curve is a locus of points, that is, a line formed by the continuous movement of a point. If the curve is a mathematical one the point moves according to some given conditions. Since each point is expressed by its coördinates x and y, the curve can be expressed in terms of x and y.

To determine the exact relation of x and y is to derive the equation of the locus. Until it is determined, the general equation is represented by

$$F(x, y) = O$$

$F(x, y)$ is read *function* x, y, and it means some expression whose value depends on x and y.

vertical axis (the axis of ordinates) and is known as the abscissa of the point, multiplied by y, which is the distance of the same point from the horizontal axis (the axis of abscissæ) and is known as the ordinate of the point, gives a constant product c. Therefore, when we have determined the value of this constant c, we can derive from it as many

A line, EF, which touches the curve at one point, such as T, is called a *tangent*.

If the point of tangency is at infinity, the tangent is called an *asymptote;* if $X'OX$ meets the curve at infinity, $X'OX$ is an asymptote.

Problem and proof. The problem before us may be considered as composed of two parts: —

1. To find the relation of the rectangular axes of coördinates to our reference lines AX and AB; and

2. To find the equation of the curve $P_1, P_2, P_3, \ldots Q_{15}$. (These letters refer to Diagram II.)

In the text it is given that P_1, P_2, P_3, P_4, and P_5 (the mid-points of the upper bases of the dotted rectangles) are points on the required curve. It is also given that the altitudes of these rectangles KF, LG, MH, NT, etc., are each half of the preceding one; hence, if we denote the first altitude by h, we have $\frac{h}{1}, \frac{h}{2}, \frac{h}{4}, \frac{h}{8} \ldots$ as the series formed by the altitudes. But this series is a *descending geometric* series whose constant *ratio* is $\frac{1}{2}$. In such a series the last term *approaches zero* as its limit. That is, if these dotted rectangles are continued, according to the law laid down in the text, to infinity, the altitudes of these rectangles will diminish in a geometric ratio and approach but never reach zero as their limit. The mid-points of the upper bases of these rectangles are points on the required curve, and the perpendiculars let fall from these points to the base line AX are equivalent to these altitudes (parallels between parallels are equal). Hence these perpendiculars form the same descending geometric series as the altitudes, and approach the line AX as a limit. Hence AX is an asymptote to the curve and may be considered as the axis of abscissæ. We thus have one axis of the curve.

Since we have determined the axis of abscissæ and since our axes are rectangular and the reference lines AX and AB are also rectangular, we may assume any line, as OY, parallel to AB and at a distance d from it, as the axis of ordinates, the origin being at O.

The rectangular axes of the curve are OX and OY, the distance OA being equal to d.

Since P_1, P_2, P_3, P_4, etc., are given points on the curve and are the middle points of the upper bases of the dotted rectangles (which are plotted to scale according to the law explained in the text), the coördinates of these

pairs of values of x and y as we wish and thus determine any number of points on the curve.

The value of x, it should be noted, is not necessarily the same as the distance of the given point from the vertical

points, according to that scale, referred to our axes of coördinates are as follows: —

$P_1\ (x_1, y_1)$	$x_1 = d + 1\frac{1}{2}$	$y_1 = 64$
$P_2\ (x_2, y_2)$	$x_2 = d + 6$	$y_2 = 32$
$P_3\ (x_3, y_3)$	$x_3 = d + 15$	$y_3 = 16$
$P_4\ (x_4, y_4)$	$x_4 = d + 33$	$y_4 = 8$
$P_5\ (x_5, y_5)$	$x_5 = d + 69$	$y_5 = 4$

The ratios of these successive abscissæ and ordinates are: —

$$\frac{x_1}{x_2} = \frac{d + 1\frac{1}{2}}{d + 6} \qquad \frac{y_1}{y_2} = \frac{64}{32} = 2$$

$$\frac{x_2}{x_3} = \frac{d + 6}{d + 15} \qquad \frac{y_2}{y_3} = \frac{32}{16} = 2$$

$$\frac{x_3}{x_4} = \frac{d + 15}{d + 33} \qquad \frac{y_3}{y_4} = \frac{16}{8} = 2$$

$$\frac{x_4}{x_5} = \frac{d + 33}{d + 69} \qquad \frac{y_4}{y_5} = \frac{8}{4} = 2$$

Obviously the ratios of the ordinates are constant. Assuming also that any two of the ratios of the abscissæ are constant, we can determine the value of d. If this derived value of d, when substituted in the other ratios, gives the same constant result throughout, both the value of d and the assumption are correct. Accordingly, —

$$\frac{d + 1\frac{1}{2}}{d + 6} = \frac{d + 6}{d + 15}$$

$$(d + 6)^2 = (d + \tfrac{3}{2})\,(d + 15)$$

$$d^2 + 12d + 36 = d^2 + \frac{33d}{2} + \frac{45}{2}$$

$$\frac{9d}{2} = \frac{27}{2} \qquad 9d = 27 \quad \therefore \quad d = 3$$

The values of the ratios of abscissæ are: —

$$\frac{x_1}{x_2} = \frac{d + 1\frac{1}{2}}{d + 6} = \frac{3 + 1\frac{1}{2}}{3 + 6} = \frac{4\frac{1}{2}}{9} = \frac{1}{2}$$

$$\frac{x_2}{x_3} = \frac{d + 6}{d + 15} = \frac{3 + 6}{3 + 15} = \frac{9}{18} = \frac{1}{2}$$

Similarly the other ratios of the abscissæ are $\frac{1}{2}$.

Hence the assumption that the axis of ordinates is to the left of AB,

line of reference AB. In other words, AB may not be, and in fact is not, the axis of ordinates of this hyperbola.

The value of y, on the other hand, is the distance of the given point from the base line AX, for as y becomes smaller and smaller the curve approaches (but never reaches) the line AX, at which utility approaches zero as its limit. AX is therefore an asymptote to the curve (that is, a line which touches or is tangent to the curve at infinity), and is the axis of abscissæ. The axes of any rectangular hyperbola must be asymptotes.

Conformably to this situation we may proceed algebraically with certain equations. If c represents the constant product whose numerical value we wish to determine, and if d represents the distance of AB from the axis of ordinates, then x will represent d plus the distance of the given point on the curve to the line AB, and y the distance of the same point to AX. Then, since P_1, P_2, P_3, P_4, etc., are points on the curve, we have the following equations of condition based on the dimensions of the dotted rectangles as plotted to scale in Diagram II: —

$$x_1 \times y_1 = c \qquad \text{or } (d + 1\tfrac{1}{2}) \times 64 = c \quad \ldots\ldots\ldots\ldots (1)$$
$$x_2 \times y_2 = c \qquad \text{or } (d + 6) \times 32 = c \quad \ldots\ldots\ldots\ldots (2)$$

parallel to it, and 3 units therefrom according to the given scale is correct.

Multiplying any ratio of the abscissæ by its corresponding ratio of ordinates, we have

$$\frac{x_1}{x_2} = \tfrac{1}{2} \qquad \frac{x_2}{x_3} = \tfrac{1}{2}$$

$$\frac{y_1}{y_2} = 2 \qquad \frac{y_2}{y_3} = 2$$

$$\frac{x_1}{x_2} \times \frac{y_1}{y_2} = \tfrac{1}{2} \times 2 = 1 \qquad \frac{x_2}{x_3} \times \frac{y_2}{y_3} = \tfrac{1}{2} \times 2 = 1$$

Clearing of fractions, $x_1y_1 = x_2y_2$ $\qquad x_2y_2 = x_3y_3$

Similar results can be obtained for any other pair of ratios.

But $x_1y_1 = x_2y_2 = x_3y_3 = \ldots\ldots\ldots$ are the equations of condition of the general equation of a curve, xy equals a constant c. Hence the general equation of the locus of the points P_1, P_2, P_3, P_4, etc., is $xy = c$, which is the equation of the rectangular hyperbola. L. H. L.

We will solve equations (1) and (2) for d and c.

Removing parentheses of (1)	$64d + 96 = c$	(3)
" " " (2)	$32d + 192 = c$	(4)
Subtracting (4) from (3)	$32d - 96 = 0$	(5)
Transposing	$32d = 96$	(6)
Dividing by 32	$\therefore d = 3$	(7)

Substituting this value of d in (3), we have

$$64 \times 3 + 96 = c$$
$$192 + 96 = c$$
$$\therefore c = 288$$

Having determined the value of c, we can now replace the general equation of the rectangular hyperbola, $xy = c$, by the particular equation, $xy = 288$.

Identical solutions may be obtained from any other two points on the curve. Therefore, for the points P_1, P_2, and P_3, we have

P_1, when $x = 4\frac{1}{2}$, $y = 64$
P_2, " $x = 9$, $y = 32$
P_3, " $x = 18$, $y = 16$

The product $xy = 288$ in all cases.

Having obtained the result $xy = 288$, we may easily determine the value of y for any number of successive physical units of supply represented by five subdivisions of the horizontal scale. The successive values of x on this supposition are shown in the middle column below. The corresponding values of y to satisfy the equation $xy = 288$ are obtained by simple division ($xy \div x = y$) and are shown in the last column: —

xy	x	y	xy	x	y
288 ÷	5.5 =	52.4	288 ÷	50.5 =	5.7
288 ÷	10.5 =	27.4	288 ÷	55.5 =	5.2
288 ÷	15.5 =	18.6	288 ÷	60.5 =	4.8
288 ÷	20.5 =	14.0	288 ÷	65.5 =	4.4
288 ÷	25.5 =	11.3	288 ÷	70.5 =	4.1
288 ÷	30.5 =	9.4	288 ÷	75.5 =	3.8
288 ÷	35.5 =	9.1	288 ÷	80.5 =	3.6
288 ÷	40.5 =	7.1	288 ÷	85.5 =	3.4
288 ÷	45.5 =	6.3	and so on		

These computations furnish the data for the successive rectangles of equal width drawn on the diagram in fine continuous lines. The determining points are indicated by $Q_1, Q_2, Q_3, \ldots . Q_{18}$. These points and rectangles show the psycho-physical relation where the increments of supply are constant, utility varying accordingly, just as the dotted rectangles show the same relation where the increments of utility are constant and the increments of supply conform to that requirement. The locus of all the points is the curve shown.

It is of interest to note that the curve necessarily bisects the dotted lines showing the differences between the altitudes of the successive dotted rectangles.[1] The further points thus determined are marked Z_1, Z_2, Z_3, etc.

[1] The values of x and y for the points P_1, P_2, P_3, etc. have been previously determined.

For P_1, $y = 64$	$\therefore FK = 64$	
" P_2, $y = 32$	$\therefore FY' = 32$	
Subtracting	$FK - FY' = 32$	
But	$FK - FY' = Y'K$	
	$\therefore Y'K = 32$	
	$\frac{1}{2}Y'K = 16$	I
Similarly	$\frac{1}{2}RL = 8$	II
	$\frac{1}{2}SM = 4$	III

If F, G, H, T, etc., are the extremities of abscissæ of points on the curve, the values of these abscissæ are found from the scale to be 6, 12, 24, 48, etc. Knowing the equation of the curve to be $xy = 288$, we can replace the x by its particular value and calculate the corresponding y's, which are equivalent to FZ_1, GZ_2, HZ_3, TZ_4, etc.

When x is 6, y is 48 $(= FZ_1)$
" " " 12, " " 24 $(= GZ_2)$
" " " 24, " " 12 $(= HZ_3)$
" " " 48, " " 6 $(= TZ_4)$

Since $FZ_1 = 48$	$GZ_2 = 24$	$HZ_3 = 12$
and $FY' = 32$	$GR = 16$	$HS = 8$
Subtracting $Y'Z_1 = 16$ (I')	$RZ_2 = 8$(II')	$SZ_3 = 4$ (III')

Hence comparing I', II', and III' with I, II and III, we have

$\frac{1}{2}Y'K = Y'Z_1$ $\quad \frac{1}{2}RL = RZ_2$ $\quad \frac{1}{2}SM = SZ_3$

In other words, the curve bisects the dotted lines showing the differences between the altitude of the successive dotted rectangles. Hence we may consider the points Z_1, Z_2, Z_3 . . . as also determined by the construction of the diagram. L. H. L.

We may obtain a continuous curve for the normal diminution of utility either by drawing in free-hand the connection between the needful number of points obtained as above, or we may plot a rectangular hyperbola as determined by any four of these points according to any accepted mathematical method. The curve is shown in Diagram II as a heavy continuous line passing through the points determined by the successive rectangles.

There is no reason for assuming that the initial unit of a supply will have the highest utility possible according to the curvature revealed by the decline in the utility of the successive units. Mathematically, this supposition would always give the initial unit an infinite utility. This does not, according to the psycho-physical law, fit the facts. In economics the generally accepted idea is that the initial unit of a supply has indefinitely large, or infinite, utility only in the case of necessaries. In other words, the axis of ordinates is usually at the left of the initial portion of the utility area. If the distance from *AB* to the axis of ordinates is greater than in Diagram II, the curve is correspondingly flatter.

In a so-called "constant-outlay" curve,[1] that is, one in which the unit price of a supply so varies as supply increases or decreases that the aggregate price or value remains constant, the vertical line of reference must coincide with the axis of ordinates. This curve also is of course a rectangular hyperbola. According to the mathematical and other implications of the above discussion, since the axis of ordinates is usually at the left of the initial point for the supply, the total outlay will normally become somewhat greater as supply increases and price declines.

The form of the normal or regular diminishing-utility curves of Diagrams I, III, and IV is the same as that developed in detail in Diagram II. The initial utility in these hypothetical curves, however, is an arbitrary matter and is

[1] Cf. Marshall, *Principles of Economics*, 5th ed., p. 839.

adjusted according to the available space. The slope of the curve may thus be made to vary at will.

The foregoing discussion of the mathematical form of the normal curve may seem to be mere mathematics rather than economics. The conception of the normal law is admittedly, and appropriately, highly abstract. Abstractly considered — whether the conditions are ever realized in practice or not, especially as regards the continuity of the variation — the curve of diminishing utility must be a true mathematical curve, that is, continuously changing its direction according to definite mathematical law. Experience shows this law to be, as roughly expressed, diminution at a diminishing rate. It is accordingly in harmony with the facts of experience that the normal curve never cuts the axis of abscissæ (or, what amounts to the same thing, cuts it at infinity), but comes nearer and nearer to it by relatively equal stages. A rectangular hyperbola meets these requirements better than any other curve.

That the normal curve belongs in the realm of abstraction does not impair its explanatory quality and should not prevent our giving it its due place, even though that be a small one, in graphic representation and practical discussion. We must recognize that "diminishing utility" is only one of several types of the variation of utility, though doubtless the most fundamental one. The variation of the utility resulting from the building up of a complementary group would obviously require an entirely different formula. But even short of this effect, the conditions required by the normal law fail in any case where there is not a homogeneous supply over against variety of possible uses. The units of commodity must also be small and the units of use numerous. Especially for the individual consumer these conditions are seldom more than imperfectly realized.[1] Hence the normal law belongs among those highly

[1] For the normal law in relation to an aggregate or social diminishing-utility curve, see p. 50 *ff.* below.

abstract explanatory principles that are never self-sufficient, but are chiefly useful as points of departure in dealing with concrete cases. But in this particular it has the highly respectable company of the law of gravitation.

No great practical importance need be attributed to the exact mathematical form of the curve of diminishing utility as determined according to the psycho-physical law. We may call this the regular or normal curve. It is implied in what has already been said that the actual variation of utility obtained in a concrete case (supposing it could be exactly measured) would doubtless differ greatly from this norm. At best the normal curve would represent only the mean of many such practical or realized curves. But to draw the curve in a way strikingly different from the psycho-physical norm, for no assignable reason, is scarcely defensible. For example, the curve is not a straight line.[1] To draw it so is contrary to the essential nature of the law of diminishing utility, strictly so called, according to which, as a homogeneous supply increases, marginal utility diminishes *at a diminishing rate*. Quantitative conceptions that are merely probable or on the average true are serviceable as correctives of imaginative vagaries even where such conceptions are in no sense of the nature of exact science. Our quantitative ideas should be made as definite as possible even if they also thereby become hypothetical. In fact the succeeding chapters of this book are mainly devoted to showing the limitations upon the scope of the diminishing-utility concept.

[1] On p. 100 of Professor Patten's *Theory of Dynamic Economics*, diminishing-utility curves for two articles — or demand curves, but the next page shows that no distinction is made between these two — are presented, one of which is convex, the other concave. On p. 91 a utility curve is drawn as a straight line. The same economist uses straight lines in his *Theory of Prosperity* on pp. 17 and 28, and convex curves on pp. 24 and 33.

CHAPTER IV

THE SCOPE AND LIMITATIONS OF DIMINISHING UTILITY

Practically the course of the curve of diminishing utility may differ markedly from the regular form above described. Even as regards the technically psychological bearing of the principle there are qualifications to be taken into consideration. Especially important is the limitation due to the psychological principles of adaptation and accommodation.

Because of this principle of accommodation, initial enjoyment is not always maximum. It takes time, so to speak, for the organism to get under way. One orange may stimulate the appetite for a second so that it gives greater satisfaction than the first. To the drunkard the first glass of whiskey makes the desire for a second stronger than was the original desire, the second glass does the same for a third, and so on. In this case the situation on the side of demand clearly changes at each step, one man plus one whiskey constituting a different consumer from one man. Something analogous holds for the oranges. In fact, in order to keep the consumer a constant quantity, it is necessary to take his reasonable estimation of the successive units, not their immediate effectiveness for satisfaction. Whether the mind is alert and expectant, whether the attention is focused upon the supply to be enjoyed, whether the sense-organs concerned are well rested and fresh, all of these conditioning factors are rendered inoperative, even as disturbing factors, if the variation of utility is viewed contemplatively and calculatingly, as is appropriate for economic judgments. This being the fact, — though the amount of formal calculation entering into the process will not bear much emphasis, since, in the view of the writer, judgments of value are by nature intuitive, — if only one

unit of supply, one orange a year, for example, is to be had, it should be regarded as a rarity to be coddled and not to be consumed when hunger is greatest. Moreover, a reasonable estimation of the utility of whiskey will take account of future effects, not merely of the immediate pleasure. The fact that initial enjoyment is not always maximum, therefore, does not in any respect invalidate the law of regular diminution of utility.

The effect of the principle of diminishing utility is not to be confounded at the bottom of the curve with that of satiation or exhaustion of capacity to enjoy. The latter, like accommodation, produces, in effect, a different consumer. The psychology of satiation, moreover, is quite different from that of diminishing utility. The allowing of time to recover appetite is not contrary to the principle, but rather, for the purposes of economics, to be taken for granted. So also is the allowing of opportunity for diverse uses. Pearls might be so abundant relatively to the needs of a particular consumer as to make their use for flavoring a drink by dissolving them in vinegar an experiment worth trying. The utility proper so obtainable, it is true, is of little significance compared with the adventitious utility, but, with regard merely to the impetus which the diminution of utility gives to variety of use, conditions might be such as to make the act reasonable.

The principle of diminishing utility is, in its practical effect, much limited by the substitution of a somewhat different good, more easily obtainable, for the good better fitted for the particular purpose but harder to get. In the course of the last century, cotton clothing, because of its cheapness, has displaced woolen very largely, regardless of the inferiority of the former for many purposes. This is but the practice before mentioned of putting the added units of a large supply to new uses, to which the good whose use is thus extended is of course less well adapted. The one process, or rather that process from the one point of view, may be called in-substitution, and the converse out-

substitution. The effect of each is to flatten the curve of diminishing utility, or rather of comparative valuation and effective demand, at different parts of its extent.

But here we are passing beyond our bounds and trespassing on the realm of market valuation. In so doing we are likely to encounter difficulties in relation to the definition of supply — for example, as to whether different grades of a commodity constitute different supplies — which are not of importance for the consideration of the variation of utility as such, with reference to which uses are ranked without regard to a margin or to an exchange or substitution point.

The absence of objective differences between units is not the one necessary condition to their constituting one supply, but only the strongest case. The inclusiveness of a supply must depend upon economic, not upon physical, criteria. The homogeneity of a supply is, for certain purposes, an aspect of goods rather than a hard-and-fast fact. If interchangeability of units is the test, — and that seems strict enough, — since food, clothing, and shelter are in higher latitudes to some degree interchangeable, they must on occasion constitute one supply. The principle of diminishing utility is applicable, though only qualifiedly applicable, to a supply whose homogeneity is anything but a physical fact.

The principle of diminishing utility should apply for any and all goods in so far as they can be brought together under a homogeneous conception. But all goods are, through economic development, for certain purposes homogeneous. In terms of exchange value or indirect utility, all goods are commensurable; they can be reduced to a common denominator. Hence the increase of goods in general can, from this point of view, be brought under the principle of diminishing utility. Because he already has so much the rich man would take little or no pleasure in a new possession that might bring supreme joy to the poor man. Increase of riches, if conceived homogeneously, for ex-

ample, in terms of money, means diminution of the utility of each successive unit for their possessor. Each thousand dollars added to a man's possessions means less, subjectively, as his "money" increases. A nation that is twice as rich as it used to be or as is another nation has not *ipso facto* twice as much well-being. The fact that money is indirectly the most versatile of goods, that is, the best adapted to serve all purposes, makes it in the abstract thoroughly homogeneous. Even if this broader sort of homogeneity is also thinner, or has but a conditional applicability, it is nevertheless highly significant. Content has been sacrificed for the sake of extent; but for some purposes the latter may be the more important.

The utility of additions to a private library, considering a book as merely a book, very clearly follows the principle of diminishing utility. From this viewpoint, it is to be measured in the abstract and by the ratio of what is acquired to what is already possessed, i.e., measured relatively rather than concretely and absolutely. The utility of such an increment may be considered merely possessively and existentially. If the books are not easily thought of under an aspect of homogeneity and as a single supply, the rich man's "money" or property certainly can be so viewed.

Property is coming more and more to be abstract or paper property, and this much at least is not merely capable of being viewed under an aspect of homogeneity; it is homogeneous, for it is adequately measured and described in dollars. Such property, both principal and income, is mere purchasing power. It is thus conformable to all the requirements for direct application of the principle of diminishing utility.

When the man of large means manages to have his expenditures keep pace approximately with his income in ways to yield legitimate utility, his great recourse is to complementary utility.[1] But he is usually too passive and

[1] Cf. chap. IX, especially p. 113.

imitative in his choices to make the most of the complementary relation. Hence, though his increasing means theoretically still continue to possess utility for him, there ceases to be any proportion between means employed and ends obtained. Without the assistance of certain invidious and anti-social forms of enjoyment, the exploitation of socially unrequited personal services, and the bidding-up of the rare, including rare sites and unusual forms of skill, it would be difficult or practically impossible to continue or to maintain an additional utility for added increments of riches and income, notwithstanding the fact that there is theoretically always some possible resort. On a generalizable level, supposing expenditures limited with regard to a reasonable return for outlay and also with regard to the amount of time required for reasonable spending, it may be said that there is no power economically to use indefinitely larger and larger amounts of wealth for private and personal ends.

There is no escape from the conception of homogeneity that underlies this idea of the diminishing utility of the dollar through assuming that a supply satisfies always but one and the same want. We have seen what a variety of uses are included under such a single want. Moreover, if we look further, we shall see that the unity of the want is itself but a reflection of the unity of some kind of good. One want is linguistically rather than psychically distinct from other wants. If we really get on psychological ground, we find that all wants are subjectively unitary as phases of one comprehensive desire for the means of satisfaction or happiness.[1] But the environment requires the specializa-

[1] *Note on the commensurability of all sorts of satisfaction.* All utilities are commensurable with each other because all satisfactions are thus commensurable. But it makes no particular difference whether we reason from the subjective to the objective term, or *vice versa.* All wants are, therefore, in the last analysis, that is, as central feeling or affection, subjectively unitary or of one kind. They are commensurable one with another and can, on occasion, be given a definite rank and order of preference. That some of the positions in this scale may be separated by wide

tion of desire and also particular thought and action with reference to a succession of concrete things "wanted."

and permanent gaps, with no stepping-stones between, does not affect the essence of the situation, but does explain the reluctance of some to admit the commensurability of all feelings. That we can assign no exact value in terms of measurement units to the distances between various points on the scale is also in principle unessential.

A question may arise also as to the identification of satisfaction with the pleasant side of central feeling or affection. It is true the word "satisfaction" is used both as referring to a mental process and as signifying something more objective and various, that is, the meaningfulness, especially the enduring meaningfulness, to the subject, of an event or experience. But in economics the term satisfaction refers to the stage of consciousness where wants or the subjective aspects of wants are commensurable with each other. In this sense satisfaction is here identified with the psychologist's pleasantness.

It is not a fundamental objection that some of our wants and choices are impulsive or sensory-motor rather than the outcome of reflective judgment, and therefore do not refer back directly to pleasantness-unpleasantness. Desire is often of this nature. The desirableness of some things economic may to some extent be determined in this way rather than by the satisfactions obtainable. But such desires are either organized into the reflective life of the individual, or else the one controlled by them, instead of by desires for such things as are valued upon taking thought, is unreasonable and uneconomic, and therefore his actions do not conform to the necessary assumptions of abstract economic theory. Hence, though it is true that the economic reactions of many individuals are not only not rational in form, but are also not reflective in method, and are consequently no more motived by anticipated satisfactions than by the desirableness of the objects sought, the position taken in the text is correct, psychologically as well as economically. Even for the most reasonable and "economic" of beings, many choices will, whether by habit or instinct, be nearly or quite reflex. Economic theory may deal with all acts and conduct *as if* resulting from states of clear consciousness because the reasonable habitual or only half-conscious responses to stimuli have been evolved from such as were formerly clearly conscious, and because functionally, that is for economics, the two are not essentially different.

Valuation, it is true, is a reflective process, whether the reference be to marginal valuation or to the more general valuation of uses. Most economic acts are therefore not the direct outcome of valuation, though economic conduct as a whole is so motived. Valuation is a piecemeal and patchwork affair.

It is only in the fully conscious and reflective process of valuation that comparison and commensuration of possible sources of satisfaction take a prominent part. But it is, of course, not the feelings themselves that are directly compared. The various represented objects and situations are tested by feeling, and so quantitatively judged. We do not weigh the feelings themselves, but *with* the anticipated feelings we weigh the things

Hence names are evolved for various wants. But the distinctions are objective or linguistic, rather than psychological or economic.

represented to the mind. Not calculatingly, but by inspection and intuition, we *feel* the greater value of this or that object or situation.

The writer is aware of the fact that there are psychologists who reject the proposition that the affective phase of mental processes, that is, feelings like pleasantness and unpleasantness, is merely dual (plus and minus) in quality and commensurable throughout its extent, though commensurable with less facility where the question is one of determining the pleasantness equivalent of a definitely and decidedly unpleasant experience. The older pleasure-pain theory was very crude. Some place for desires that are almost mere motor tendencies, which offer chiefly possibilities of unpleasant feeling as a result of obstruction or inhibition, must be made. This point has already been disposed of. For the rest, where the psychologists disagree, one is permitted to make his own choice between them. The anti-hedonists have no such exclusive possession of the field as the noise they make may suggest. The contributions of the so-called English schools to both psychological and economic thought are still vital, though not fashionable, and they are of course subject to modification and restatement. But the economist need insist only that all the qualities that make goods desirable are, in the last analysis, commensurable with each other on the subjective plane. With psychological terminology he is little concerned.

Some anti-hedonism — for present purposes it might better be called anti-commensurationism — is, moreover, discredited at its inception, since it is the product, not so much of scientific study as of an ethical viewpoint that *wants to believe* some of our desires to be absolutely different qualitatively from others and absolutely incommensurable. That such conscious or unconscious "pragmatism" does violence to fundamental canons of scientific thinking, it is doubtless useless to point out. It is perhaps even less useful to argue the point.

This note may perhaps seem rather dogmatic in tone. Lack of space for fuller treatment is the excuse. The note is intended rather to express an opinion than to demonstrate a truth. In this spirit, also, it may be well to add that the writer is unable to attach any ethical significance to psychological "hedonism," without regard to whether it be thoroughgoing or qualified. He feels that ethics is concerned principally with the problem of the right *relation* between the good of the first person (x) and that of others (x_1, x_2, x_3, etc.), and only secondarily or derivatively — through the requirement that each x be of a nature to fit into the system of x's — with the meaning of x, the good of the individual, itself. On ethical subjects he finds himself most in agreement with Henry Sedgwick, *Methods of Ethics*.

As regards the psychological implications of the above statement, reference may be made to Titchener, *Elementary Psychology of Feeling and Attention*, 1908, where the controverted points concerning affection are dealt with and disposed of in order on a purely psychological plane and

If, to a considerable extent, different kinds of goods can be interchanged and combined in a single supply, it is equally true, on the other hand, that we need to analyze and separate the different elements of utility in a single good or a single supply. In a single concrete good there may often be distinguished several quite different utilities, that is to say, power to satisfy distinct desires that might find satisfaction in separate goods. A watch may give satisfaction because of its reliability as a time-keeper, because of the beautiful material and decoration of the case, because it is an evidence of the wealth and social standing of its possessor, and because it is a reserve that can be quickly realized upon in case of urgent necessity. The utility of the watch has a collective reference to the benefit receivable from all these uses.

The diminishing utility of a supply of watches will be due to the applicability of the law to the different elements of utility brought together in each watch.[1] Since the initial utility and the rates of diminution are different for the different elements, and since the ratio of the significance of each element to that of the others differs for different tastes and means, a difference in ability to pay will express itself by a sacrifice of more of the decorative utility than of the time-keeping utility. Conversely, greater means find expression in the demand, not merely for more articles, but especially for new qualities and new utilities in the articles bought, even when they remain commercially of the same kind. Diminishing utility is inevitably obscured under such circumstances, where the purchaser chooses articles with reference to adding new utilities to them, instead of increasing his supply of the goods. It might be said that the kind of utility last added — for there may be no in-

where a conclusion is arrived at that is quite in accord with the views here expressed, but of course without ulterior economic, or other functional, reference. See also O. Külpe, article *Gefühl, Handwörterbuch der Naturwissenschaften*, vol. IV (1913), p. 678.

[1] For a parallel discussion of this subject from a different point of view, cf. Clark, *Distribution of Wealth*, pp. 235–45.

crease in the number of goods — is the marginal utility. But are the others then the super-marginal stages of the diminution of utility?

The use of the watch as an illustration is not favorable to simplicity of explanation, since the time-keeping and other utilities embodied are sold in such large "chunks" that it appears as if there is for each particular quality only one point or level of utility, varying with the tastes and circumstances of the individual, instead of a curve. But the discontinuous succession of the units of a supply only obscures the principle of diminishing utility without affecting its validity as an abstract explanatory principle.

The difficulty with discontinuity is occasioned by the fact that subjective economics is under the necessity of taking, for the most part, the point of view of the individual. The combination of such utilities into a social curve of diminishing utility — whose relation to the demand curve will be noticed presently — does not alter the principle involved, while it does make a curve of the points.[1] The regular diminution of utility as a social phenomenon is what is of most significance for economics. It is rarely that a single point is given, furthermore, even for the individual, at least if he is the economic representative of a complete private economy, that is, a family. The head of a family needs to buy or own several units of time-keeping utility, or even several watches. Even mere duplication may be a convenience. Though a person can use but one umbrella at a time, it is decidedly convenient to possess more than one.

The relation of diminishing utility to demand is largely a matter of the summation of utility curves. The transition from the normal diminishing utility curve for an individual to social demand curves is thus in part a mathematical problem. If the normal law holds for summated curves, it acquires correspondingly better standing practically.[2]

[1] Cf. Jevons, *Theory of Political Economy*, 2d ed., pp. 96–98.

[2] The rectangular hyperbola appears to be of great significance also in relation to the interpretation of other economic phenomena, notably those of the status of the distribution of wealth.

But first, it may be asked, how is the transition from a diminishing utility to a demand curve effected in the case of an individual? The diminishing utility curve measures want, which, in order to be effective as demand, must be supported by purchasing power. But this is simply a matter of determining what is the utility equivalent of a marginal dollar. This quantity of utility will be constant for any comparisons and judgments the individual wishes to make. Hence the individual's demand curve is simply his utility curve with its vertical scale translated into terms of dollars. A certain length of ordinate represents, not merely a certain quantity of utility, but also a stated monetary equivalent. Of course as a demand curve it will be raised or lowered by a change in the circumstances, or the purchasing power, of the individual. But that does not affect the mathematical character of the curve in the least, but merely changes its scale.

Some one may question whether the upper reaches of the curve, the higher utilities, should be translated into money in quite the same way as those near the margin, since, it may be alleged, these uses will not be valued in money till they become marginal, and then money will be scarce. But the equation of utility and money supposes the individual's purchasing power unchanged. However difficult to apply, and of however little commercial interest the result may be, these high and largely super-marginal utilities must be measured by the same standard, both as to utility and money, as the marginal ones, in order that the curve be correctly conceived. In fact, however, we should not suppose that the individual's purchasing power is being reduced by subtraction from a non-replenished stock of money by reason of whatever he buys or consumes. He has income as well as expense, so his supply of money will not be depleted by economically well-considered expenses, nor the form of his demand curve affected. His utility and demand curves will themselves take account of the fact that he is spending from income, and also providing by his

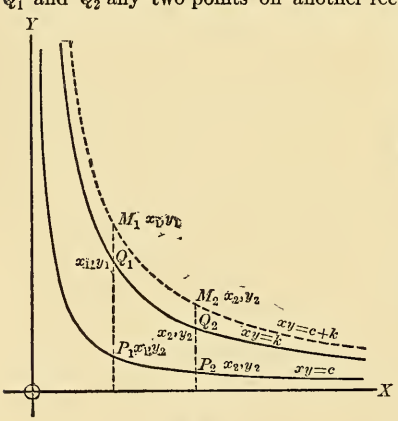
expenditures partly for future uses. If his circumstances change, for example, by the loss or the inheritance of a fortune, of course the scale of his demand curve will change, but that is a matter already disposed of.

The application of the normal law to the social diminution of demand is not so simple a matter. It is a necessary postulate that several normal curves summated be a similar normal curve, that is, a rectangular hyperbola. But it is a demonstrable proposition that a curve constituted by the vertical superposition of an indefinite number of rectangular hyperbolæ, in such a way that all the axes of ordinates coincide, and that the area subtended by the resultant curve (i.e., between it and the axis of abscissæ) and lying between any two ordinates is the sum of the areas between the corresponding ordinates of the constituent curves, is itself a rectangular hyperbola.[1]

[1] *Given:* P_1 and P_2 any two points on a rectangular hyperbola $xy = c$; Q_1 and Q_2 any two points on another rectangular hyperbola $xy = k$ (referred to same axes of coördinates); M_1, a point whose abscissa is the same as that of P_1 or Q_1 and whose ordinate is equal to the algebraic sum of the ordinates of P_1 and Q_1, that is

$$y_1'' = y_1 + y_1';$$

and M_2, a point similar to M_1.



To prove that the coördinates of M_1 and M_2 satisfy the equation of a rectangular hyperbola.

Proof: The equations of condition for the points P_1, P_2, Q_1, and Q_2 are

$$x_1y_1 = c \qquad x_2y_2 = c$$
$$x_1'y_1' = k \qquad x_2'y_2' = k$$
$$x_1y_1 = c \quad \therefore \quad y_1 = \frac{c}{x_1} \qquad x_2y_2 = c \quad \therefore \quad y_2 = \frac{c}{x_2}$$

Since $x_1 = x_1' = x_1''$ and $x_2 = x_2' = x_2''$

$$x_1y_1' = k \quad \therefore \quad y_1' = \frac{k}{x_1} \qquad x_2y_2' = k \quad \therefore \quad y_2' = \frac{k}{x_2}$$

It is, of course, the area subtended by the curve that represents the quantity of utility or of demand. The method and results of summating these areas constitute the subject under consideration. In the case just mentioned they are added by way of the ordinates. Such addition of utility or demand curves raises a question as to what then happens to the significance of a unit of the horizontal and vertical scales, respectively.

Price is measured along the vertical axis. This scale remains the same for the summated as for the component curve. But if we should add a number of curves, the level of the resultant curve might be raised to an inconvenient height, hence it may be well to reduce the scale or plot the resultant curve on a smaller scale than the component curves, perhaps by dividing the summated scale by the number of component curves. This will give the resultant curve a mean position among the curves summated. If we wish to regard the former as a mean of the latter, we can conveniently consider it as drawn to the same scale. Mathematically the summated curve as above discussed and the mean curve are in effect the same. They have the same equation, for each of the ordinates of the mean curve is some aliquot part of the corresponding ordinate of the summated curve.

Next to be considered is the question as to what happens to the horizontal scale, along which are represented the

By hypothesis $y_1'' = y_1 + y_1'$ $\qquad$ $y_2'' = y_2 + y_2'$

$\therefore\ y_1'' = y_1 + y_1'$ $\qquad$ $y_2'' = y_2 + y_2'$

$= \dfrac{c}{x_1} + \dfrac{k}{x_1}$ $\qquad$ $= \dfrac{c}{x_2} + \dfrac{k}{x_2}$

Clearing of fractions

$x_1 y_1'' = c + k$ $\qquad$ $x_2 y_2'' = c + k$

Since the products of the coördinates of the points M_1 and M_2 are constant and equal to $c + k$, it follows that M_1 and M_2 are two points on a rectangular hyperbola whose equation is

$$xy = c + k$$

L. H. L.

units of potential supply. The measuring of a unit of this scale is changed by direct summation, so that a unit that before represented but one unit of commodity now represents as many as there are curves added together. But of course if we use the mean instead of the sum of the ordinates, the horizontal scale retains the same significance for the resultant curve as for its constituents.

It is possible to deal with the units of the horizontal scale in a different way if at the same time we change the meaning of a unit of the vertical scale. We may add the demand areas by way of the abscissæ instead of the ordinates. That the resultant curve will be a rectangular hyperbola is obvious if we note the fact that this species of curve is symmetrical with reference to both its axes, that is, x and y are interchangeable in the equation ($xy = c$) of a rectangular hyperbola. In unmathematical terms, the arm lying near to the axis of ordinates has the same relation to this axis that the other arm has to the axis of abscissæ. Hence what holds of the summation of ordinates and of areas subtended between the curve and the axis of abscissæ holds also of the summation of abscissæ and of the similarly subtended areas. What is proved of the rectangular hyperbola in relation to one axis is proved in relation to the other.

The next question is what is the meaning in terms of economics of this addition of abscissæ. The significance of a unit of both the vertical and the horizontal scales, in terms of price and of potential supply, respectively, remains the same. The area of the resultant curve is of course extended in proportion to the number and extent of curves summated. The demand at ordinary prices is of course much prolonged. But, if desired, a mean curve can be used in this case as it is above where summation is effected by way of the ordinates. In any case the form of the curve remains the same. But it may be desirable to make some allowance for the fact that the upward-extending arm may not be more than

partially represented in the demand schedules of some consumers.

The fact referred to, namely, that the initial point of the supply does not necessarily coincide with the axis of ordinates, makes a qualification necessary. The extension of demand brings in new users whose initial demand-price may be so low that they are ordinarily not purchasers at all. This would mean in practice some distortion by way of a flattening of the lower portion of the curve.

On the other hand, the demand curve, unlike the utility curve, takes account of the price that the consumer is willing to pay. Ordinarily, this is substantially only money. But if the price is low enough, other costs come into consideration. These have been discussed in the preceding chapter under the name of "neglected costs." They tend to cause the lower end of the demand curve, as expressing willingness to purchase, to drop rather sharply and then abruptly terminate.

Another possibility remains to be considered. The above discussion assumes that the axes of ordinates coincide with one another as well as the axes of abscissæ. Of course the axes of abscissæ will coincide, since the zero-price line has the same limiting relation to all demand curves.

But suppose the axes of ordinates of several curves do not coincide? This would mean that at about ordinary prices the rate of diminution of demand would be comparatively rapid in one curve and comparatively slow in another, the one arc being nearer the axis of ordinates than the other. But this situation does not prevent summating the curves with reference to either of their axes or any other chosen axis. The abscissæ of each curve bear such a relation to one another as to constitute a rectangular hyperbola. Add the two sets, and the result is a rectangular hyperbola. For the rest we need only to know how the significance of the units of the scales is affected. The fact that some of the upper reaches of some of the curves may

be only hypothetical merely distorts that portion of the realized demand curve, but not in a way to affect its fundamental characteristics.

For the benefit of the reader who is little inclined to trust himself to mathematical reasoning, or who may feel that we have narrowed our premises too much to arrive at a conclusion of practical value, it should be said that the demonstration that the individual utility curve is a rectangular hyperbola was developed without thought of any ulterior relation to the problem of combining utility curves to make social demand curves. It should be noted also that the practical value of the above discussion is not conditioned by the curves combined being exactly rectangular hyperbolæ. The result is in any case a curve showing "diminution at a diminishing rate," though with various possibilities of distortion from the true form of the rectangular hyperbola. The essential point is that the summation of individual utility or demand curves gives a social demand curve of the same general character. The addition of corresponding terms of any two descending series with diminishing rates of decline always gives another descending series having this same character.[1] The compound curve of social demand will show the same characteristics as the simple utility curve.

By "diminution at a diminishing rate" in this connection, as throughout this essay, is meant diminution such that the absolute differences between successive steps form a descending series. In other words, the rate of diminution is conceived absolutely, not relatively, though the mathematician would mean by a constant ratio (rate) one that is relatively constant, and therefore, in the present sense and case, diminishing, while a constant ratio, in the present sense, is what the mathematician would call a con-

[1] The mathematical proposition to this effect is found, for example, in Hall and Knight's *Higher Algebra*, 4th ed., 1899, "Convergency and Divergency of Series," art. 288, p. 234.

stant difference. The terms of a series exhibiting a diminishing rate, in the present sense, would yield what the mathematician calls variable differences with each difference smaller than the preceding one.

Our conclusion is thoroughly practical. For a discussion of the course of the diminution of utility or demand we need not be punctilious as to whether we refer to the individual or to society at large. But we should not forget that the principle of diminution at a diminishing rate is abstract in both cases and relates, as we shall later see, to but one kind of utility.

To return to the question of purchasing power — a summated or social curve of demand is composed of curves expressive of a great variety of conditions in this respect. This makes no difference as regards the form of the curve considered as a result of the form of the individual demand curve. It does, however, make a great difference as regards the social significance of the altitude of an ordinate, marginal or other. Quantity of utility *cannot be read back* from such a curve. A given point on the curve does not represent any definable quantity of utility. We might as well try to obtain a sum of money by counting the pieces in a pile composed in various proportions of all the coins of all the currencies of the world as to attempt to determine the utility of an article merely by means of the price it fetches. It is one thing to say that the diminishing utility curves of different individuals in relation to the same kind of good can be translated into demand curves and summated to constitute a social demand curve, and another thing to say that the social demand curve can, as regards the realized utility corresponding to the various steps in its quantitative gradation, be treated in quite the same way as the utility curve (which is practically identical with the demand curve) of an individual. Differences of purchasing power greatly affect the translation of the social variation of utility into a demand curve, while the purchasing power

of an individual can be assumed to remain constant, and therefore, his demand curve is not affected like the social demand curve. The relation of riches and poverty, that is, of the quantity of economic means, to the significance of marginal utility, as that which is back of effective demand, is touched upon directly and indirectly below in treating of complementary utility, transputed utility, and finally, by way of what is practically a summary, in the concluding chapter.

To return to the individual diminishing utility curve with reference to dealing with a point suggested by the watch illustration used some pages back — let us consider the embodiment of utility, for example, time-keeping utility, in several articles commercially described as of different kind, or put into different categories of goods. This brings up another phase of the application of diminishing utility, that is, to elements of utility instead of to concrete goods. The analysis ought to pursue a given utility through different supplies. The comparisons and decisions of the purchaser in the market are seen to be thus analytical in following one kind of utility through various supplies. More or cheaper watches make necessary fewer clocks, and cheaper meat less bread. Of course this is a phase of substitution. By disregarding the distinction between interchange of units of the same supply and substitution from a different supply, this analytical point of view both simplifies and makes more difficult the conception of diminishing utility. It simplifies the conception by making it independent of relatively accidental objective likenesses or differences in goods. At the same time it requires more abstract thinking, and also raises questions as to the nature and importance of substitution. But substitution applies only for goods and not for their abstract utility-elements.

The law of diminishing utility has direct reference only to the movement up or down of the marginal degree of utility. It would not be improper to insert the word

"marginal" before "utility" in the statement of this law. The range of movement of the margin is of course quite small in the practical experience of an individual so long as his circumstances are not greatly changed. This may easily lead to the supposition that the unknown intra-marginal region is a sort of ghost-land inhabited by no real super-marginal utilities but prepared on occasion to erect new and higher marginal utilities like stockades to protect against intrusion. This is not the writer's view, however inexact the quantitative determination of the degree of super-marginal utilities may be admitted to be.

The doctrine of diminishing utility, if it is to be given its due scope as an explanatory principle, requires abstraction. The underlying law of utility variation must naturally be abstract. Its application is therefore to be qualified with reference to what is left out of account. The "other things" that are not always "equal" are not to be dismissed as mere disturbing factors. From them and for them are to be sought new phases and independent principles of the variation of utility, to the consideration of which we shall shortly come, especially in the chapters on the complementary relation.

CHAPTER V

PROCESSIVE UTILITY AND EXISTENTIAL UTILITY

WHATEVER may have been the original meaning of the word, "consumption" has now come to have as much reference to enjoyment of utility as to the usual material consequence of that enjoyment, which is the destruction of the utility. The subjective effect is in fact, notwithstanding its neglect by economists, of the greater intrinsic importance.[1] Consumption may therefore be presumed to have these two phases, enjoyment of utility and destruction of utility. To what is merely presumptive there are of course exceptions — in this case of very great significance.

It may well be just the objective and market consequences of consumption that have given it its practical socio-economic importance. If goods could serve the purposes of consumption forever without subtraction from their efficiency, production would be very different from what it is. It would be an exclusively dynamic phenomenon, instead of being the chief subject-matter of static economics. Production under present circumstances assumes not only that wants recur, but also that most goods sooner or later lose the qualities by which they satisfy these wants. The usual material consequences of consumption, even though they

[1] Say defines consumption as essentially the loss of value that is its "invariable and inevitable consequence" (*Treatise of Political Economy*, book III, chap. II, pp. 351–52 of Prinsep's translation, 1827). To Senior "the making use of a thing" is the essence of consumption, the destruction of utility being unintended and generally, but not necessarily, incidental (*Political Economy*, pp. 54–55). The latter's conception is now the prevailing one. The views of both of these writers are especially significant because it is to them we owe "utility" as a technical term of economics. To Say, also, we owe the traditional fourfold division of economics which constitutes consumption one great branch.

are not the necessary consequences, are thus basic for production. Rate of destruction, or "rate of (objective) consumption," is also, obviously, a direct limitation on enjoyment. Hence it is not inexplicable that economists have made so little of what should be the central topic of a study of consumption, that is, enjoyment.

There are goods whose "rate of (objective) consumption" is zero. Gems are familiar examples. The fact that means of enjoyment may remain intact while continuing to serve their purpose, even if this state of things cannot go on forever, must have much importance for social economy. The mistaken assumption that the enjoyment of such goods involves their destruction is due partly to their occasional loss, which is a different matter, partly to the depreciation of their utility through obsolescence. Goods that endure cease to be adapted to changing wants, and the supply, owing to the dynamic character of society, if for no other reason, ceases to be adequate in amount. There is no objective cost attached to the keeping and use of such goods, no impairment of objective capacity to satisfy, though it is true an "investment" in consumption goods whose utility and value remain constant may be said to cost "interest," or their exclusive possession may be said to involve the consumption of "time value."

If, instead of being very exceptional, utilization without impairment of utility were the rule for all goods, the uses of a good once created would be or tend to become practically free. If production were continued, the goods themselves would tend to be free. Of course these suppositions are contrary to fact, although the instinct of workmanship is a true cause that would continue to be operative where the commercial value of the product no longer offered any reward for productive effort. The situation imagined is purely hypothetical and of interest only as presenting the extreme case, not of mere diminishing, but of diminished, marginal utility. Some approach, though rather remote,

to such a condition, however, can be seen in the case of the uses of public art collections, and of some very permanent public constructions where amortization of investment has been affected. That such diminished or low marginal utility means small utility would be an entirely unwarranted inference. On the contrary, marginal utility is low only because supply, that is, the supply of uses on the spot in question, is large. Total utility is correspondingly great and average utility need not be small.

The destruction of utility, however, is in many cases necessary to enjoyment. It is a part of the consumer's end and is clearly seen to be such. In this type of consumption, which is so much the more common as to contribute the most insistent element to the conception, destruction of utility is a part of the process upon which enjoyment depends. This is *processive consumption.* Its objective counterpart is processive utility. Food is typical of the class of processive utilities. But the shoe-sole that is worn out by use, or the display of fire-works that is enjoyed only as a process, are equally good illustrations. There is in such cases a causal connection between the destruction of the utility and the enjoyment or consumption of the good.

The marble statue is an example of an opposite type of utility, which we have named *existential.* This is enjoyed by reason of the existence and presence of the good.[1] Man needs for his enjoyment of it no processes or changes in it. His action upon it has reference only to preserving or intensifying its utility. Processes in the object destructive of its existential utility may occur; if they are not related to the enjoyment of the good the nature of the utility is not the less existential. There is here no causal connection between enjoyment and the destruction of utility. The object of enjoyment may be "a joy forever."

[1] There is a certain analogy with Hermann's conception of *Nutzkapital, Staatswirtschaftliche Untersuchungen,* 2. Aufl., 1870, p. 632.

Objects of æsthetic feeling in a broad sense (not merely objects of art) are the most available examples of existential utility. All durable goods should, and usually do, make this æsthetic appeal. They are enjoyed for themselves, and not merely for their material effects. They are effective for satisfaction by reason of their existence and presentation apart from any destructive use. If there is such destruction, it is accidental, or else incidental to the exploitation of another kind of utility. Porcelain, bric-à-brac, personal ornaments, precious stones, and substantial furniture for the home possess, in the main, existential utility. Most of the materials of construction of a house have this character, while other parts wear out, though very slowly.

The general principles determining the distinction between processive and existential utility are simple. In the former, deterioration of utility is proportioned to the application of the good to the production of satisfaction. The utility in question may be entirely destroyed by a single act of consumption or it may yield a series of satisfactions. Deterioration of existential utility, on the other hand, is in some cases entirely absent, and in no case is it directly related to use and enjoyment or their result. There may be deterioration, usually extending over considerable time. It may also be regular, but if so it is in proportion to time and not to use. Existential utility does not contain the seeds of its own destruction. It is, however, conditioned by the durability of the object enjoyed.

The application of these principles in distinguishing the two kinds of utility in the concrete is not a simple matter. It requires much use of analysis and abstraction. It is chiefly with reference to the variation of utility — which is the main external aspect of the economy of utility, but not exhaustive of the significance of the distinction in question — that we are here concerned.

The distinction between processive and existential utility is not exactly parallel with that between perishable

and durable goods. Economically perishable goods have their utility destroyed by one or comparatively few acts of consumption. Economically durable goods yield a rather long series of enjoyments. The latter, it is true, afford the better opportunity for the residence of existential utilities. Hence the division lines of the two classifications run near each other. Food on the table may contribute to enjoyment by its form and looks, as well as afford gustatory pleasures and nourishment by its processes. Such utility as prepared food possesses from the former point of view is, abstractly considered, not processive and not economically perishable. The wearing of a pair of shoes, on the other hand, involves their destruction necessarily, causatively, and proportionally to their use. The fact that they are susceptible of many more than one use does not alter the processive character of their consumption. A coat whose cut and material are pleasing to the eye wears out as a result of continued use for protection. It has the two sorts of utility, separable only by abstraction.

Economically perishable utilities — of course elements of utility rather than entire goods — are necessarily consumed processively, and by definition, in one or comparatively few acts of enjoyment. Economically durable goods may be either slowly consumed processively or enjoyed existentially. Economically perishable utility is a smaller circle included within that of processive utility.

Physical perishability and durability also have a relation to the distinction between existential and processive utility. A bouquet of cut flowers, proverbially illustrative of the ephemeral, is, with a qualification as regards the perfume, enjoyed existentially. Many forms of food are also extremely perishable physically, but even they may have some degree of existential utility. It is obvious, however, that such goods as flowers, even though thoroughly enjoyable existentially, cannot be prolific of this kind of utility, because the period during which they can be enjoyed

is so limited, and because it is of the nature of existential enjoyment to be contemplative or passive, not intense, and therefore not to be crowded into a brief time. Thus not only economic perishability, which is the case with processive utility *par excellence*, but physical perishability, also, is so much an obstacle to the exploitation of existential utility that at first thought one would not think of the utility of a bouquet of flowers as of this nature, though it is. The economically important forms of existential utility inhere in physically durable goods, often in goods potentially of infinite duration.

It is the good that is both physically and economically durable that is an especially appropriate substrate for the development of existential utility. If we think of all goods as cross-classified into economically perishable and durable, and physically perishable and durable, respectively, then the condition most favorable to existential utility is found when an object is within the circle both of economically durable and of physically durable goods. Both sorts of durability, moreover, offer the better substrate for existential utility in proportion to the length of their periods. But with the development of means of preserving physically perishable goods the physical distinction is coming to lose much of its importance for economics.

Destruction or deterioration of utility is incidental to practically all concrete forms of enjoyment, for the kinds of utility are combined and a processive element enters into most of them. The needs of the organism require much consumption that cannot be otherwise than processive. Many highly valued goods are physically perishable. Finally, destruction of utility frequently comes by accident where there is nothing about the normal enjoyment of the good to cause it. The continuance of production rests upon no uncertain basis in assuming the deterioration and destruction of existing utilities.

The greatest significance of the division of utility into

processive and existential and of goods into perishable and durable is in relation to saving and accumulation. Logically, the proper approach to the consideration of this subject should perhaps be through the diminution of utility, since saving is in effect the application of a portion of an abundant supply of present goods to a new use outside the present in order to obtain a higher marginal utility. But saving is intelligible otherwise than as a corollary of the principle of diminishing utility, and has doubtless been practiced on other grounds. These grounds will be seen to be broader than would find warrant in the merely commercial and pecuniary interpretation put upon such matters by economists too much inclined to the business man's point of view.

Saving and commercial investment are not parallel phenomena or different phases of the same thing. There are opportunities for saving and accumulation within the field of direct utility and "consumption." Savings are often incorporated in certain concrete goods accumulated for use, chiefly for the sake of a permanent psychical income of existential utility. Such utility embodied in physically durable goods will yield an income just as truly as invested funds. The dwelling is the most important example of a good that yields such income. Books and all sorts of furniture have a similar capacity. The income from a dwelling house is so definitely recognized and so considerable that it is commercialized. Indeed the dwelling is often considered an investment even by the man who owns his residence. But from the social point of view it is always a consumption good.

In the case of existential income from possessions there is no definite quantitative relation between enjoyment and destruction of utility. There will be costs of maintenance, but these will be a very small fraction of the income if due attention is originally paid to permanence, with reference to the direct utility of such permanence as well as its in-

vestment value. We Americans take too little satisfaction in solidity of construction. The amount of utility realizable in this way is not to be measured by the discounted utility of the extended period of use. It is another matter that the amount of utility is of course limited by the character of the consumer. The too common practice of hiring or renting very durable consumer's goods obscures the possibilities of the situation. Not only does the option of renting check this sort of accumulation, but the use of rented goods destroys some part of the income of direct utility obtainable. There can be no pride of ownership and there is no basis for the exercise of some of the finer activities of consumption. Development of broadly æsthetic possibilities is stunted.

Even in the field of production it is a misfortune that connection between owner and goods owned is typically no longer direct, but takes place through the medium of abstract property. The cultivation of American farms by their owners forms an exception to this general rule as regards the nature of the proprietary relation. Of those that are well kept and well stocked, how many are made such chiefly by commercial motives or close attention to what pays, rather than by pride of ownership? Obviously few.[1] But the evil consequences of the separation between ownership and utilization are even greater as regards consumption goods than as regards the instruments of production.

That circumstances favor the capitalistic ownership of certain consumption goods is deplorable. The consumer should be encouraged to provide for the future. He cannot learn what such provision means in any better way than by acquiring consumption goods that will yield their utilities chiefly in the future. Small improvements in such possessions will constantly be made with little or no subjective cost, because of the pleasure taken in working upon one's own goods. It is therefore unfortunate that

[1] Cf. Patten, *Consumption of Wealth*, p. 40.

the growth of cities and of ground values has put the ownership of a home beyond the reach of so many, and that, in addition, the increasing importance of mobility to the laborer has made the risks involved in trying to own a home so great. Bank deposits and abstract property have no advantages that quite compensate for those of putting savings into concrete possessions. A bank account is doubtless the best form for a consumption reserve, because of its many-sided availability, but this seems to be its only point of superiority. Even this advantage is obtained in the Orient for savings embodied in concrete goods through wearing a reserve of precious metal in the form of bracelets and other ornaments. The diamond may often serve a similar purpose in the West.

Saving, in the broad sense of providing goods for future use, is the fundamental problem of the economy of consumption. Though the degree of development of foresight and prudence is sometimes excessive, it more often falls much short of adaptation to existing conditions. For the sake of increasing the availability of a consumption reserve, such complete abstinence from current use of savings as takes place when they are pecuniary and deposited in a bank instead of being embodied in durable articles of use may to a very limited extent be generally desirable. But it is otherwise not to be recommended. Under the conditions of life of the majority, investment merely for the sake of pecuniary income is not justifiable. Income from property, in contrast with income from labor, is not fundamental. It is rather an incident than a basis of social economy. The emphasis which in effect identifies providence with provision of income from property, with intent thus to make income from labor unnecessary, and proffers a general and unqualified recommendation of this policy, is immoral in substance as well as of limited practical applicability. It does not take account of the impossibility of generalizing the plan, and supposes that what is good private economy

is good political economy — that ancient and pervasive fallacy! Attention to existential utilities is, on the other hand, within the reach of nearly, if not quite, all men. True economy emphasizes lasting qualities in objects of durable use. Of course diminishing utility still puts limits upon saving, in ways that we shall later see, as well as upon accumulation for merely present consumption. But that does not alter the fact that saving should, as it does not under current conceptions, relate to concrete goods.[1] If the majority of workmen cannot, under existing conditions, own the capital, or even implements, that they use, — except in agriculture, — if it is even too risky for them to attempt to own their homes, it is still possible for them to surround themselves with substantial furniture and good household appliances. Here they should make a beginning. If the crowded and unstable life in the city is too great an obstacle even for this much saving of concrete goods, the situation is indeed deplorable.

The significance of the foregoing distinctions for saving is involved, and more fully explained, in their relations to rate of diminution of utility.

[1] Cf. A. S. Johnson, "Influences affecting Thrift," *Political Science Quarterly*, June, 1907, vol. XXII, p. 224. His mode of approach to the question as to the nature and conditions of saving is different from, and his treatment broader than, that of the text, which is specially concerned only with the proposition that the fundamental form of savings is durable concrete goods. But some of his conclusions are remarkably similar.

CHAPTER VI

RATE OF CONSUMPTION IN RELATION TO DIMINUTION OF UTILITY

If the uses of a congeries of goods are restricted to the present day, the diminution of utility must be very rapid. Processive desires are quickly sated, and the alternative existential utilities require time for gradual exploitation and development as one learns to appreciate them. If, on the other hand, the uses of the goods will be available through an indefinite future, and if, also, there will be opportunity for their selection and adaptation, the rate of decline of utility will of itself be hardly sufficient to set any limit to accumulation. Further acquisition will be checked by the cares of administering so many goods, that is, by indirect cost, rather than by the diminution of direct utility. In other words, for this second set of conditions, the rate of diminution of the utility itself will be very low, that is, the curve will slope very gradually. On the other hand, the satisfaction to creative æsthetic instincts yielded by producing such goods may cause the supply to be correspondingly abundant and the marginal utility to be also low.[1]

Goods supplied under both these sorts of conditions, whether combined or alternative, will be subject to comparison and choice. Hence the economic importance of the difference in respect of the rate of diminution of utility.

The principle of diminishing utility is ordinarily set forth without reference to the extent of time during which the utilities can be enjoyed, or else with an implied restriction to present time which rules out of consideration future

[1] Cf. page 59.

and existential utilities. Thus to stop at the hypothetical oranges and apples is to shirk the task of analysis. The frequent extension of the hypothesis to include the compulsory present consumption of a prescribed number of oranges at the expense of negative utility is but a further step into unreality, not an illogical outcome of restricting the point of view to the present. Consumption is a matter of choice and volition. No one would choose to consume a dozen oranges at once, at the expense of negative utility. Acts which are so clearly not well-judged do not even need to be considered as disturbing factors. The hypothetical concrete may be less real, as well as less true, than an abstraction. To fail to consider future uses of existing goods in relation to the diminution of utility is to turn aside from an important phase of the economy of consumption.

Rate of consumption, or rate of removal from an existing supply, if rapid, is so either because of physical perishability or because of economic perishability. High degree of physical perishability is the stronger case, for no inhibition of enjoyment can prevent the depletion of a supply having this characteristic. Goods that are perishable in the physical sense must be consumed in the present, or in the immediate future, which may be considered a part of the economic present. Personal services are the perfect example of perishability. Fresh meat and vegetables are similarly perishable. The very nature of such goods limits to the economic present the time during which the supply may be applied to produce satisfaction.

In order to utilize goods that will spontaneously cease to be available in a day or two, immediate uses must be found and wants supplied with strict regard to limited present capacity. The consumer may conceivably be willing to fill his stomach with fresh fruit at the cost of foregoing other food. But even so heroic a measure of out-substitution can provide for but a small addition to the supply, and that at the expense of a great decline in utility. Food

ready for the table has a utility especially prone to fail of full exploitation. To contrive a way to delay or prevent decay of fruit and similar commodities is, when possible, the economical expedient, even if that involves changing the character of the good so radically as to put it into a different class of supply. Oranges thus become marmalade.

A less cogent illustration of the effect of physical perishability upon rate of diminution of utility is that of goods physically perishable but not ministering to a physically limited appetite, such as cut flowers. The existential nature of the enjoyment makes it possible to use to advantage a larger supply. Complementary relations both among the flowers and with other objects are resources not equally available for processively enjoyed perishable goods. But the lack of effective uses is quickly felt, at least if homogeneity of supply is insisted upon. Goods of this sort are not numerous.

It is proper in considering the rate of diminution of utility to hold to the point of view of the individual. The above illustrations do this. But the expansion of demand for a particular good in a market is not dependent merely upon increasing use of it by previous consumers. If this were true the commercial disposal of physically perishable goods would be even less economical than it is. Demand is a social fact. New uses and fresh appetites of additional consumers retard the decline of commercial demand, so that the rate of decline of price, as supply increases, will be slower than the diminution of utility. Even so it is not easy to induce buyers to remove a glut of perishable goods.

The difficulty of disposing of a large supply is often so great that dealers find it scarcely worth while to try to tempt demand by lowering prices. Dealers in fresh fruit are therefore inclined to allow a large part of the product to spoil rather than radically reduce the price, even when they can thus reach new consumers. Whether it pays to try to extend demand by lowering price, thus obtaining a

larger net return from a smaller profit per unit, depends on the rate of diminution of utility, or strictly upon its market representation by willingness to pay. If the lowering of the price one-half will not considerably more than double the demand, dealers may prefer to maintain prices by destroying part of the supply, or, what amounts to the same thing, by letting it destroy itself.

High rates of diminution of utility are evaded or disguised in various ways, so that the peculiarly high rate of physically perishable goods is not always recognized. Rates of demand for perishable commodities, determined by limited but recurrent use, necessitate corresponding adjustment of rates of supply. Whether this occurs among dealers or at the point of original production, the result is that the city-dwelling consumer does not often have occasion to exercise his ingenuity in finding new uses for a surplus. So far as the producer is also consumer, the problem of disposing of an unexpected and unsalable surplus is economically insoluble. Hence the farmer's waste of nature's abundance in minor products. Thus to most consumers the high rate of diminution of utility of physically perishable articles is not of practical concern. An unusually large supply is likely to be reduced to moderate proportions before it reaches them.

So far as goods are physically very perishable, the time of consumption or enjoyment does not enter into the calculation of the rate of diminution of utility. So far as goods can be stored or preserved, which is the situation next to be considered, time does enter into consideration. Then the principle becomes no longer simply and directly applicable. Most cases of diminishing utility are therefore complicated by an element not ordinarily reckoned with.

Rate of consumption, even where consumption is not coerced by the imminent physical deterioration of its objects, may still be high. Economic perishability of high degree is likely to mean prompt consumption. The time

intervening between production and consumption is an element of cost which it is economy to reduce to a minimum. Economic perishability is also likely to be accompanied by physical perishability. Even where the goods are not physically but only economically perishable, there must be provision for regular replacement. Hence there will be a tendency on the part of the consumer to let the future take care of itself.

But economically perishable goods can often be kept. Even if they will not bear mere storing, their condition or their circumstances may be so modified as to preserve a portion of the supply for a time. In this way an economical adjustment of a temporarily excessive supply, or glut, may be effected. Through the recurrence of appetite, articles which if consumed immediately would have little utility, may, by being held over, come to have much. Where rate of consumption is determined mainly by economic perishability, this possibility of holding over some of the articles may have decisive importance for the rate of diminution of utility. The utility obtainable from a large yield of small fruits has been greatly enhanced by the development of the art of canning. The price of potatoes fluctuates from year to year more than that of wheat because one season's supply cannot so easily be held over.

The degree of utility of the articles to be held over is less than it would be if they could be economically used at present. This is true apart from the likelihood that deterioration or change of quality may result from storage or from the use of preservative measures. Such effects relate to cost rather than to positive utility. The utility taken account of may likewise be less because of the room required for storage; but the possessive or existential utility of a generous store should largely counterbalance such an element of cost. Mere futurity of use is the factor of fundamental significance wherever physical perishability no longer controls the situation. By resort to preservative

methods this applies even for meats and fruits. Future time is thus a factor in the calculation of how best to use an abundant supply. But, as respects its *modus operandi*, it is merely a special case of diminishing utility. The utility of units at present superfluous may have full effectiveness later when the supply has been reduced. But their present utility suffers, or is a discounted utility, by reason of the necessity of postponing consumption.

However, though constituting so large a reservoir of utility for goods whose enjoyment can be thus postponed, future uses of any kind or class, or goods having such uses, inevitably diminish in degree of utility as their number increases. For such uses diminishing utility applies through the discounting of the future, since the more distant the future use, the greater is the discount. Discounting the future takes away more utility from each added increment of supply in proportion to the remoteness of its availability. Even though realizable utility does not at all deteriorate or decrease, the necessity of postponing use to some time in the future causes diminution of equivalent present utility. If this is the only cause, the rate of decline will be characteristically slow. The reservoir of future uses affects the steepness of the curve markedly but does not change its character.

Let us suppose a supply of like units having an objective (physical) value or effectiveness of one for each, all obtainable now and all of such a character that they will not deteriorate through keeping, but subject to such conditions as regards demand that one, and one only, is wanted with a definite and constant degree of desire each year. If the rate of discount is 10 per cent, or one-tenth per year, these articles will exhibit a diminution of utility, due solely to future discount, such that the successive units will be valued, as discounted, at respectively 100, 90, 81, 72.9, 65.6, 59, and so on. But without the discount there would be no diminution of utility. Each article would have a utility

of 100. Of course the illustration involves abstraction. But its point is of both theoretical interest and practical bearing. Without future discount, the utility of the like units of an increasing supply, composed of articles not subject to deterioration with time, but processively and quickly consumed, would remain constant. In proportion as goods approximate the character assumed, that is, in proportion as they are processively consumed with regularity but are extremely durable physically, they exhibit diminishing utility only because of future discount. This is of course an abstract statement of principle which takes no account of the cost of keeping articles for future use. It is abstract, also, and employs a hypothesis contrary to fact, in assuming for the moment the absence of future discount. This psychical process is of fundamental importance in economic consumption as well as even more important in production. We have seen how in the field of consumption it constitutes a special case of diminishing utility.

Wherever consumption is processive in its nature, the recurrence of objective need is insured. Hence any number of goods supplied, no matter how great, will continue to have some utility provided their physical quality can be preserved. There is no warrant for assuming that utility must become zero short of an infinite supply. That net utility may become nil, owing to the increasing relative importance of costs, is of course true, but that is not due to any principle of diminishing *utility*. As already stated, it is not correct to represent the curve of utility at its lower levels as typically declining sharply to zero or below.[1]

To the great economy of their use, the later goods of an abundant supply may preserve their utility but little impaired by being held for the future. One pair of shoes of a particular kind is all that is needed for present use, but a rather moderate temporary decline in price might induce

[1] Cf. Diagram I and the accompanying discussion in chap. III.

one to purchase several pairs for future use. This supposes, of course, an appropriate place for storage.

It is unfortunate that the conditions of city life, under which more and more of the people live, tend to make the storing of goods a function of the merchant and foster a hand-to-mouth existence. So far as this is the practice, not only is an over-supply less easily disposed of economically, but the consumption reserve of society will also probably be less adequate and be maintained at greater real cost. The merchant can meet the cost of storage only out of pecuniary profits. For the consumer the cost is met in part or wholly by the direct enjoyment of possession and abundance. Objectively considered, also, the place of storage will be near the market when the function is performed by merchants instead of near places of consumption, where the use of room will be much cheaper. It is true, on the other hand, that the merchant's methods will doubtless be pecuniarily much more efficient, but if this means less labor and smaller loss, it also means the skimping of reserves.

The possibility of exchange introduces no complication in the course of the diminution of utility, though in a developed economy it acts as a decided limitation on the tendency of the utility of a supply to diminish, especially that sort of utility which is embodied in durable and portable goods. The lowering of a marginal utility to the individual brings to his notice the possibility of obtaining a corrective gain of utility by exchange for some other article. Thus units of an abundant supply will be disposed of in exchange for units of a less abundant supply having a higher marginal utility. A subjective exchange value may thus take the place of direct utility in the diminishing series. This indirect utility is nearly constant, hence the diminution practically ceases at what may be called the "exchange" point. But it is a permissible, or rather a necessary, abstraction, to leave this factor out of consideration, since it

belongs outside the field of consumption. Or, if we take the broad social point of view, the alternative of exchange disappears. Economists employ this abstraction, usually without mentioning it, in discussing the diminution of utility.

From the point of view of society as a whole, — and also from that of the individual, so far as his practices are not warped one way or the other by his situation in a highly developed exchange economy, — abundance finds natural expression in better provision for the future and in increased attention paid to durability and existential utility, or, if such utility be embodied in intermediate goods, to "fixed" forms of capital. These phenomena are usually explained as the result of a low rate of interest. It is doubtless more nearly correct to say that the low rate of interest results from abundance of goods. But more fundamental still is the operation of the principle of diminishing utility. The consumer seeks to check the rate of diminution by projecting uses further and further into the future through emphasis on permanence of subjective as well as of objective income.

Economically durable goods may be processively consumed — since the former quality is a matter of degree — and physically durable goods may deteriorate. Though well-tanned leather is exceedingly durable, shoes are worn out and the need recurs. The case of processively consumed goods that are susceptible in greater or less degree of being kept for future use covers the broad middle ground between the extremes of goods or utilities that must be enjoyed instantly or not at all and those that may be enjoyed from time to time for an indefinitely prolonged period without requiring a renewal of the supply. This mode of consumption, through deferring the time of consumption, makes possible the adjustment of demand to large production or to a temporarily high rate of supply. Time and time discount therefore affect the rate of diminution of utility of

this great class as indicated above. How then does it affect the extreme case next beyond, that of existentially enjoyed and absolutely durable goods?

Physical durability conditions the permanence and importance of existential utility. The one is in effect the body of the other. The situation of existential utility embodied in goods that are absolutely durable physically affords the apparent paradox of consumption or an act of enjoyment with no accompanying reduction of the supply of goods. There is therefore no *rate* of consumption. If infinite or indefinite durability, notwithstanding unstinted enjoyment, can be assumed, — which is, of course, the extreme and abstract case, — any increase of supply is also permanent. The increase occurs once for all. Duration of enjoyment does not enter into consideration in relation to the diminution of the utility of such a supply because the estimation of each unit takes account of all the future. Where goods do not of themselves decay and where their processes also are not the occasion of enjoyment, their comparative utility is not affected by changes in supply that will come with the passing of time, for time will have no effect on the existing supply. Once existential utility is separated (by abstraction) from processive utility, there is a case for the simple and direct application of the law of diminishing utility uncomplicated by time discount.

It would seem as if time discount should be of maximum importance and should be most effective in preventing rapid diminution of utility in the case of a supply of existential utility embodied in permanent goods. But in this case postponement of the enjoyment of the second portion of a supply does not mean waiting for the first portion, through the exhaustion of its utility, to make room for the second. Such goods are not subject to consumptive processes. The ordering of their consumption or enjoyment is a problem of synchronous harmony, not of economical succession. Among such goods the applicability of the time

discount principle is accordingly, at least in one direction, much limited. It is perhaps not even necessary for them to wait their turn in presentation, since ideas of possession, without presence, may give some satisfaction. If this applies generally, as it seems to, the diminution of utility is in such cases free from complications due to time discount. The case is very much like that of thoroughly perishable goods.

Diminution of utility through time discount requires something analogous to putting a number of lines end to end. Lines cannot be put end to end where they are cut off and limited strictly to a narrow space, nor where each line is infinitely long. If duration of use is either completely confined to the present or if it goes to the other extreme and is not at all limited by time, rate of consumption and future discount may be disregarded.

From the fact that time does not affect the degree of existential utility of a supply of such physically durable goods, nothing is to be inferred as to whether the rate of diminution of their utility will necessarily be either high or low. This depends upon the capacity of consumers. But if that capacity is large, or can by education be made so, then the utility should decline but slowly. Æsthetic enjoyment meets these requirements. The finding of these æsthetic uses, however, is rather a question of complementary grouping of different articles than of increasing a homogeneous supply. But the supply may be objectively quite heterogeneous and still be one supply. Heterogeneity is merely relative, at least with regard to the principle of diminishing utility. The supply may, therefore, be allowed to contain possibilities of complementary grouping. Hence the relation of capacity to supply may be considered favorable to a low rate of diminution for thoroughly existential utilities. The rate of diminution of the utility of a supply of successive ounces of silver in the form of tableware would be very different from the corresponding variation of the utility of successive bushels of potatoes, chiefly for

the reason that the enjoyment of silverware offers all the possibilities of an enduring future. The utility of fruit that must be eaten soon or not at all must diminish more rapidly than the utility of books, which may all be read in time, and the possession of which may be enjoyed continuously.

Since the rate of deterioration of utility is different for different goods, the economic ordering of consumption requires the comparison and equation of different rates of consumption one with another, and thus of rates of supply and consumption with things constituting supplies that are to be enjoyed existentially, without "consumption" in the narrower sense, and to be possessed permanently. The laws of processive consumption have to do with rates of supply: those of existential enjoyment, with absolute amounts supplied. Newly produced diamonds are a permanent addition to the supply. Newly produced beef will presumably only keep pace with the appetite that destroys beef. Any addition to the supply of diamonds is a dynamic phenomenon, though its effect may be balanced by other dynamic changes. The production of beef, on the other hand, is ordinarily a static process. So much "per capita per year" or per day is the proper way to measure a supply of processive utilities. If this ratio remains constant, production merely maintains the existing equilibrium. So much for so many consumers, on the other hand, is the appropriate measure of existential utility. There need be no mention of the duration of time.

The link between the two sorts of supply, and the means of equation, is the use of a constant rate for discounting future uses to the basis of the present. This rate may be either appropriate to the circumstances of the individual or standardized by the market as a rate of interest. If the rate of discount is 20 per cent per annum, then the present estimation of an absolutely permanent source of utility yielding a given amount of satisfaction per annum should be 5 times that of a processive good yielding the same

amount of satisfaction in its one or few uses within the year. If the rate of discount is 10 per cent, the multiplier is 10; if 5 per cent, the multiplier is 20. It is assumed that the reader can work out the mathematics of these relations for himself. The principle is the same if present enjoyment is to be compared with that for a period extending but a few years into the future. A terminable annuity has a present value not equal to the utility of the prospective payments, but somewhat less than their sum. Similarly, one may compare the utility of a banquet with that of a three-year subscription to a periodical. The latter would have to promise a considerably greater total utility in order to be preferred. Such a choice always involves the principle of future discount, though the decision results from processes that seldom have any resemblance to mathematical calculation. It is unnecessary to refine upon the method by comparing processive consumption completed at once with the enjoyment of a series of uses running short of a year.

Differences as regards the character of the curve of diminishing utility are most complicated in the concrete mixed cases, where the same object has to some degree both existential and processive utility. Most goods have both these forms of utility, combined in varying proportions. The concrete case is often so intractable just because the rates of diminution for the two are very different. A further complication results from the fact that the relative estimation of the two elements is very different for different individuals, according to their appetites, tastes, and circumstances. These differences are factors in most exchanges. But such difficulties do not affect underlying principles.

Supposing the direction of its increase is controlled, a supply, or a congeries, of goods that includes both goods for the day and goods for all time will consist in its earlier increments chiefly of goods of the former sort, and in its later increments, chiefly of goods of the latter sort. Here is the place of normal saving, or care for future uses of goods.

The order of choice in the acquisition of goods for consumption, present and future, is in general an expression of underlying principles of variation of utility and of the attempt to counteract its decline.

In all rational judgment of utility the future will be duly discounted with reference to risks to life and to goods inherent in the nature of things. But this is a question of probabilities and actuarial calculations, not of the discount for futurity as such, of which it is independent and not a part, though a coördinate factor working with it in practical affairs. The factors here are such as should influence a person who contemplates investing in a life annuity. Owing to community and continuity of enjoyment and of interest, resulting from family ties, such considerations do not ordinarily count for much in the economy of consumption.

This rather lengthy discussion may be summarized as follows: Rate of diminution of utility is determined by rate of destruction or objective consumption of goods as well as by the degree of elasticity of the limit of capacity to enjoy. The decline of utility is most rapid where the nature of the consumable goods compels immediate enjoyment. This is the case of physical perishability and of a rate of objective consumption that is unavoidably high. In order to utilize an unusually large supply of such goods, appetite must be forced. If, under such circumstances, supply fails of detailed adjustment to ordinary consumption, the effect upon valuation is very marked. A high degree of economic perishability, on the other hand, is not so effective, at least if preservation or storage of the surplus goods is practicable. Rate of consumption and conditions of demand require, in this case, not a certain supply, but a certain average rate of supply, that is, so much per week or per year. Merely temporary over-supply will not, unless combined with physical perishability, cause a marked decline of marginal utility. By equalization of supply between seasons and from year to year, the rate of diminution of utility may be much mod-

erated. Finally, there are some goods that have no rate of consumption in either sense. They are subject neither to spontaneous deterioration nor to necessarily destructive use. Here again mere capacity to enjoy controls the rate of diminution of utility. It is not mere appetite, however, but a capacity that can be educated, and the enduring character of its object favors education. This sort of capacity will, therefore, generally show a slow rate of decline of marginal utility. These differences in the rate of objective consumption have an important bearing on the ordering of consumption and on the vendibility of commodities. They have also their general social significance in relation to forms of saving and of compensation for saving.

CHAPTER VII

THE COMPLEMENTARY RELATION

The phenomena of consumption are subject to a "law of variety."[1] This law is a further expression of the same psychical tendencies that are the foundation of the diminishing rate of diminishing utility and of the elasticity of demand.

As goods become more abundant they are specialized in order to lessen the diminution of the power to satisfy. Men come to discriminate carefully differences of quality. Complex groups of different goods are formed in order to enhance the enjoyment of consumption. Increasing civilization and increased accumulations of goods thus involve the refinement of consumption. The refinement of consumption may be described as the attentive discrimination of varieties and qualities of goods and the utilization of their differences to intensify their psychical effectiveness.

Diversity of use, as has been shown, accounts for the course of diminishing utility at a diminishing rate. Favored by objective diversity of goods, this same diversity of use may quite alter the character of the variation of utility for successive increments of goods. The unstinted satisfaction of one need or of a particular set of needs is not enough. A man turns to other and different sources of satisfaction with the greater strength of inclination in proportion as there is by comparison too much of one particular kind of good at his disposal. This is a principle of value in æsthetics as well as in economics. Variety is indeed the great means of intensifying all feeling. This seeking out of new means of satisfaction would be without motive

[1] Cf. Senior, *Political Economy*, pp. 11–12; Jevons, *Theory of Political Economy*, 2d ed., p. 58; Patten, *Dynamic Economics*, p. 41.

if the situation had no effect upon the variation of utility.

In proportion as a number of goods are unlike one another, there is an increase of the possibility of an interdependence of the satisfactions derived from them. Variety itself may perhaps produce this result through the intensifying effect of contrast upon feeling. The juxtaposition of complementary colors intensifies the corresponding sensations. The mere diversity of a collection of goods increases the pleasure they afford. The merchant with a varied stock of goods gets the trade of people to whom that very diversity is a stumbling block. Each enjoyable good is not merely effective for itself, but the relations of the various goods are effective. A principle of heterogeneity crosses that of homogeneity in its influence upon the consumption and enjoyment of goods.[1]

Heterogeneity of itself, however, merely affords opportunity for the organization of complementary relationships. In order that goods be complements, it is also necessary that their uses fit into one another. Here we find the explanation of the utility of a "supply" of clothes that is really a suit, that is, a consumption group of which the members are interdependent. But the principle of diminishing utility is quite as inadequate to explain the successive or comparative utility of the several suits which an individual may acquire or possess. As regards suits of outer clothing, one for winter, one for summer, one for general use, and one for evening wear are perhaps a workable foundation for a young man, though of course everything depends upon his position in society. Perhaps a woman would require a dozen gowns in order to possess an equally well-rounded wardrobe. Nor would the principle

[1] Patten, *Dynamic Economics*, chap. VIII, on "The Influence of the Consumption of Wealth on the Value of Commodities," is especially suggestive in relation to the significance of the complementary relation in consumption.

of diminishing utility explain the degree of satisfaction given by such a collection. But clothing is not complete with gowns or suits. The humorist's definition of contentment as that state in which a man possesses a pair of suspenders for every pair of trousers is a further application of the same principle. In the furnishing of a house one needs chairs, but not a homogeneous supply of them. In some chairs we want suitability for sitting upright, in others for rocking, and in still others for reclining. The principle of diminishing utility has but a remote relation to the rational furnishing of a home. The furniture of a room or of a house is a group of interrelated goods the value of each of which depends upon the completeness and the complementary character of the parts in the whole. So it is in greater or less degree throughout the field of consumption. The utility received from any article depends upon what it is in relation to that to which it is being added.

As regards man's attitude towards goods in general, it is said, with an element of truth, "The more a man has the more he wants," seemingly in direct contradiction to the principle of diminishing utility. But upon examination we find that it is new things and different things that are thus wanted. A man wants to harmonize and round out the furnishings of his residence. He wants books to fill out the gaps in his private library. He wants more room in which to keep both. He wants a country home to which he can sometimes escape from the complexities of city life. We may as well stop here, though the able and ambitious man, or his wife, need never stop in the pursuit of things to "go with" what he already has.

A diversification of goods adequate to diversity of desires, or such as to stimulate desire, has thus a very different effect from the simple increase of a supply of like goods, — an effect which may possibly amount to increasing utility. The goods latest added to the ones habitually possessed and consumed are highly valued and not lightly

given up. Much apparent irregularity and extravagance in the spending of a limited income is due to the temptations of such a situation. The appeal of the novelty and of the thing that goes so nicely with what one already has is very strong.

Complements are goods so related to and interdependent on one another that a part of their utility is a joint utility which would be destroyed by the dissociation of the goods. Each good that a man enjoys has, with few exceptions, in addition to its own particular utility, a share of complementary utility, by so much as it is with advantage grouped with other goods in consumption. An increase of the supply of goods of the same sort is subject to the principle of diminishing utility. But the later goods obtained may bring more than a proportionate addition of utility provided they are complements of previous possessions instead of being similar to them. Diminishing utility is a law of the variation of *particular* utility. Complementary utility is governed by different principles.

The theory of the complementary relation of economic goods received its name from Carl Menger, who, together with Wieser and Böhm-Bawerk, have developed it and given it a recognized place in economics.[1] But the Aus-

[1] The chronology is as follows: Menger, *Grundsätze der Volkswirtschaftslehre*, 1871. The concept and term "*complementare Verhältniss*" is introduced in the first few pages and made much of throughout. Wieser, *Ursprung und Hauptgesetze des wirtschaftlichen Werthes*, 1884, and *Natürliche Werth*, 1888, develops the theory of imputation, which is of course based on the complementary relation. Böhm-Bawerk's contributions are contained in his *Grundzüge der Theorie des wirtschaftlichen Güterwerthes*, two articles in the *Jahrbuch für Nationalökonomie*, 1886, and in his *Positive Theorie des Kapitals*, 1889. The articles on *Güterwerth* pay much attention to replaceability, of course in the complementary group, as determining value. The prominence of Böhm-Bawerk in the discussion of capital and interest has made him, it seems to the writer, to an undue extent the interpreter of Austrian theory generally, at least in America.

All these Austrians pay little attention to anything besides the interrelations of the factors and means of production. Menger is as much interested in the serial interdependence of the different orders of goods

trians concern themselves with the value-interrelations of productive agents only. The interdependence of land, labor, and capital is doubtless the best illustration of the complementary relation, as well as its most important application in economics. But the relation of goods to one another as means of enjoyment is also highly important in consumption, and is perhaps more fundamental. Such attention as this phase of the subject has received is chiefly due to Professor Patten.[1] In the case of the complementary relation of factors of production the utility resulting from grouping becomes largely imputed economic value. Imputation of value, though based upon the complementary relation, involves something more than that, and will be considered later in connection with transputed utility, which is its representative in the field of consumption. Here we are considering complementary utility as such, without reference to the frequent but not necessary result, transputation or imputation.

Entirely satisfactory illustrations of complementary consumption are difficult to obtain only because it is so omnipresent. There are so many interrelations of each good, and these interrelations are often so complex, that it is not easy to detach one group. Only by abstraction can one group be separated from others, and the grouping may be largely due to historical coincidence. Beer has been called "the syncretic accompaniment of sausage," and the connection is certainly more than an accident in the history of civilization and of nations. Its bitterness as well as, in

— an idea incidentally referred to above at page 11 — as in their contemporaneous coöperative grouping. He extends the term complementary in a special wider sense to cover both sorts of interrelation (p. 11). This does very well in the field of production. But we should hardly speak of a complementary relation between a good of the first order and those of remoter orders upon which its enjoyment depends. In consumption, complementary goods must be thought of as used in conjunction with one another and as all of the first order, while for goods of remoter order degree of remoteness does not matter.

[1] *Theory of Consumption*, 1st ed., 1889, and *Dynamic Economics*, 1892.

Germany, its cheapness, appear to fit it for this association. But who can prove complementariness when the association is also a precipitate of centuries of history? Beer-drinking is a time-honored Teutonic tradition. Feudalism and the retardation of the peaceful economic development of civilization long kept swine-culture unduly prominent in Germany. Pork needs to be highly seasoned, and sausage-making is in part a device for the thorough seasoning of meat. Thus the association may be traced to historical causes. At any rate, historical and other factors are interwoven.

The determinate association of certain condiments, sauces, and salads with certain other dishes in skilled cookery ought to furnish a long list of illustrations of harmonious consumption groupings. The *chef* who is really a master of his art has a repertory of such harmonies of taste and smell, which, for their full effectiveness, must further receive appropriate setting of tableware and linen and other accompaniments. The skill of the housewife depends upon a delicate sense for complementary relations. Homelike living conditions are the product of the complementary association of many economic and other utilities, the absence of any one of which may be destructive of happiness. Home makes its strong appeal because of its complex harmonious stimulation of so many important instincts and interests. Comfort also is a result of complementary conditions.

The peculiar field of the complementary relation is in the "comforts" of life. Discomfort is usually due to the fact that our surroundings, and by reflection ourselves, are "out of joint." Comfort suggests a due, and only a due, dependence on things material, a position which should strongly commend itself to the economist. Necessaries are too exacting. They control the consumer more than they are controlled by him. Luxuries, if not thoroughly adventitious, are too much a matter of caprice and are unamiable.

Comfort is modest and unpretentious. That it smacks of the material should not be held against it.

Mere sumptuousness is in bad taste, because it is an evidence of failure to find or exploit complementary relations, and thus of inefficient consumption. In dress and in entertainments, not expense, not lavishness, but the harmonious adjustment of parts in a whole is most effective.

We have assumed that heterogeneity of goods is necessary to their bearing a complementary relation to one another. The situation out of which, it appears, the complementary relation emerges is that of relatively simple desire over against a complex of goods. The desire for the comforts of home, though psychologically simple, is complex in its economic manifestation. But is this heterogeneity of goods a necessary condition of the complementary relation? It would seem that twelve dinner plates of one style are complements of one another, and that a number of curtains of the same sort are needed to complete a set. But the set of curtains is wanted for a particular room or house. The curtains are really the complements of the windows. The dinner plates, also, are complements of the other dishes of the set and of other table furnishings, perhaps even including the guests. Likeness, even as an occasional basis for complementary utility, will not stand analysis. It may enter, but only as a minor and somewhat accidental part of a situation which as a whole is one of heterogeneity. Unlikeness is a fundamental qualification for the complementary relation.

It is natural to compare the complementary relation in economics with the effect upon the intensity of sensation or the juxtaposition of complementary colors. There is more than an analogy, but also less than a perfect analogy, between these two cases. Some economically complementary effects are doubtless due to the intensification of the specific quality of each member of the group. But in general the

group has its own peculiar character distinguishable from the contribution of each member.

The complementary relation is much too general a phenomenon to conform itself fully to economic conceptions or to admit of clear-cut delineation and exposition from this or any other single point of view. Recreational pleasures are the complements of labor, each having a beneficial effect upon the utility of the other. Luxuries are complements of simple necessaries. Hence the danger of too great freedom from the need of economy and of care in expenditure. But in economics only utilities that admit of economic conception and manipulation, that is, in the highest degree, those embodied in concrete goods, can be included in a theory of the complementary relation. Ethics should, of course, go farther.

CHAPTER VIII

THE STANDARD OF LIFE AS BASED UPON COMPLEMENTARY UTILITY

The most important case of the complementary relation in consumption is that association of necessaries, comforts, and luxuries which constitutes a man's standard of life.[1] The standard of life is a psychical fact. Stability is imparted to it by both the habits and the ideals of which it is compounded. Whatever is considered a part of the standard of life has an accession of importance by reason of this relation. It will not be sacrificed lightly. The most importunate instinct may be held in check by regard for the standard of life. Hence the point of its definition as consisting of those articles of customary consumption which a man will not sacrifice for the sake of marrying. Whenever the pleasures and comforts of marriage and family life are postponed for the sake of continuing the consumption of certain articles, these are held to for the sake of more than their own particular utility.

It is because of its character as a group of complements, moreover, that the standard of life, once destroyed, is not easily built up again. A generation brought up under harder conditions of life does not know the meaning of a higher standard, since it is able to enjoy only one or two of its components irregularly and piecemeal.[2] The complex group is no longer to be known as such. There is little or no opportunity for the mass of such a population to become familiar with or adapted to the better standard.

[1] Duly recognized as a phenomenon of the complementary relation by Patten, *Dynamic Economics*, chap. xx, "The Standard of Life."

[2] Cf. Walker, *Political Economy*, sec. 346, for an effective statement of conditions, though not in terms of the complementary relation.

A high standard of life, involving the use of an extensive variety of articles of consumption, though fundamentally a psychical phenomenon, is favored or hindered by environmental conditions of supply. Passing reference to some of these matters will illustrate the character of the standard of life as a phase of the complementary relation.

Food plays the largest part in the consumption of the majority, and the standard of life is therefore especially related to the conditions of food supply. Where one great article of food is much cheaper than any other, under economic pressure there is a temptation to subsist more and more upon that alone. Unrestrained multiplication is likely to result in peopling up to the food supply and in hard and precarious subsistence for the masses. This is why it can be said with a good deal of truth that the potato was the ruin of Ireland. The monotonous rice diet of the masses in the Far East, also, is an important clue to economic conditions there. The situation is much better when several articles of food do not greatly differ from one another in cost, so that there is not much temptation to simplify consumption and little danger of losing the advantage of choosing and combining articles of food from diverse supplies in a complementary relation.[1] The more costly a nation's staple food is, the more easily it finds complements and substitutes. Wheat is better than potatoes, because the actual comparison is between wheat with other accompaniments and alternatives and potatoes with nothing else.[2] Partly for a similar reason, the standard of life is likely to be higher in a cold than in a warm climate, since in the former animal food, as compared with vegetable, is less expensive than in the latter. The increase of agricultural rent resulting from the increase of population promotes a varied diet, in so far as it requires more intensive cultivation and the combination of different crops, either at the same time

[1] Cf. Patten, *Consumption of Wealth*, p. 46.
[2] *Ibid.*, p. 48.

or in rotation.[1] The reduction of the cost of transportation, by reducing the cost of imported articles of consumption, notably the products of the tropics, favors variety in consumption and the development of further complementary utility.[2]

We may expect another important effect of an increase of agricultural rent upon the standard of life. An increase in the proportion of the price of raw produce taken by rent means relatively higher prices for the raw produce than for the superposed processes of manufacture and hence a decrease of the distance between merely enough food, that is, bare subsistence, which is by comparison raw produce, and a comfortable living, which requires some elaboration of goods.[3] This connection has, however, been obscured by the improvidence of laborers which has generally accompanied increase of population and high rents. Technical improvements in manufactures also work in the direction of making relatively slight the difference of cost between bare subsistence and comfort. The laborer is not so likely to lose, or if he does lose, he can more easily regain, a better standard of life if the finer processes and products are relatively inexpensive. The cost of the raw materials that go into a loaf of bread is said to be about one fourth the price of the loaf as retailed. For this country the ratio of 3 to 1 is probably fairly representative of the present relative costs of the simpler forms of manufacture and sale as compared with the cost of producing raw materials. Such ratios are not most favorable to a high standard of life. The extensive opening up of new lands to cultivation in the last century was less of a permanent benefit to human-

[1] Walker, *Political Economy*, 3d ed., 1888, sec. 398, emphasizes the "craving for a diversified diet" — which reminds one too much of "the propensity in human nature . . . to truck, barter, and exchange" alleged by Adam Smith.

[2] Patten, *Consumption of Wealth*, p. 64.

[3] Cf. Ricardo, *Principles of Political Economy and Taxation*, chap. v, paragraph near the end of sec. 37.

ity than the contemporaneous improvement and cheapening of manufacturing processes.

If technical improvements should come to be more effective in reducing the cost of food and raw materials than of manufactured products, it would be a misfortune. If they should take a turn such that some single standard food could be manufactured cheaply by chemical processes, a situation would arise that would be of all external conditions the most unfavorable to a high standard of life. For it can be assumed that human nature would continue to remain what it is and that men would therefore continue to need economic props to aid in protecting them from their own primitive impulses. The extensive direct fixation of nitrogen would be less disastrous, for it would not involve less variety in food, since lavish fertilization of the soil would favor the production of many kinds. But it would make many of the important permanent possibilities of satisfaction cost relatively more than at present. Relatively cheap food is anything but an unmixed blessing for a people.

An illustration of the effect of relative costs upon choice in consumption and upon the standard of life is to be seen in the character of dwelling-houses in very large cities as compared with those in the country. The difference may be partly due to the requirements of fire protection in cities, and also to the stronger tendency of the city-dweller to spend for consumption up to the limit of his income. But this is not all. City houses are more expensively built partly because the cost of a dwelling, including the site, is so largely the cost of the latter. Consequently, a small percentage of the total cost makes all the difference between tolerable and elegant quarters. In the country, on the other hand, the dwelling usually contains plenty of room, but its construction is likely to be anything but solid or elegant. The cost of mere room in large cities is very great, hence the pressure of the housing problem. If comparisons

are made on the basis of a given level of solidity and finish in house construction, however, one can scarcely question that the proportion of the population of the country in this sense poorly housed is much greater than that of the city. For the sake of having highly polished hardwood interior finish, the dweller in the country might have to sacrifice 25 per cent of his room, while the city dweller may need to give up only 10 per cent. Following the line of least economic resistance produces very different results under such differing conditions.

The division of consumable goods into necessaries, comforts, and luxuries is varied somewhat by Senior, who substitutes "decencies" for the middle term.[1] Decencies and comforts are to some extent the same goods looked at from different points of view. The former are things one must have in order to maintain a tolerable social status. Thus the demand for comforts, in the character of decencies, is supported by the greater esteem in which their possessor is held. But the complementary relation is more fundamental than this last factor. As compared with the demand for luxuries, the desire for comforts gets its cue but little from other human beings. But there are some minds all of whose choices are imitative.

The reasons why the maintenance of a tolerable standard of life is held to be of so great importance by the intelligent consumer do not appear in their entirety merely from the consideration of complementary utility. The positive attractions of a high standard are chiefly phases of the complementary relation. But there is also a powerful *vis a tergo* operative to prevent an easy surrender of goods not necessaries. Bare necessaries, and goods in general so far as consumed in that character, make little or no contribution to satisfaction. The development of this point forms the subject of a later chapter.[2]

The economic function of the family is the care of con-

[1] *Political Economy*, p. 36. [2] Chap. xi.

sumption. This applies generally at present and also seems to be the best permanent adjustment. At one time production also was organized upon the basis of the family unit. But progressive economic differentiation and division of labor have now almost completely stripped the family of productive functions. It is natural that, as women find work in the home a less secure foundation for existence, more of them seek industrial occupation. Or, in the "higher" social strata, they may have no serious occupation or avocation at all. The effect reacting upon the cause, women become less fit for home-making. The home tends to be no longer the center of education for the child nor of recreational interests for the husband. For a man to marry may thus come to mean hardly more than his undertaking to pay the board bills of two instead of one. But perhaps the wife continues "at work." One breadwinner does not then need to earn enough for a family and perhaps cannot.

The present tendency, as foreshadowed in the large cities, threatens to leave to the family no economic functions at all. If there is any truth in the theory of an economic interpretation of history, it must then go badly with the family. The institution was not founded upon sexual relations, and will not be secure upon such a basis, no matter how much suffused with romanticism. The "emancipation of women" has its advantages, of course, but, so far as it means that women in general may expect to free themselves from household cares, it must bring vastly greater disadvantages both to women and to society. The care of consumption is entirely worthy of being the chief interest and occupation of half of mankind. The unity and continuity of the family are essential for the due exploitation of complementary and of existential utilities.

Social atomization is destructive of both moral and economic standards. The effectiveness of the family as the custodian of the standard of life is endangered by present tendencies. A high standard of life is so much a matter of

habit and tradition that it needs the services of the family as its transmitting medium. It is made general or continued general by such influences as are represented by a sound family life. The social importance of a high standard, moreover, is conditioned upon its being a mass fact. If a high standard controls the conduct of only a few, it must be quickly swamped.

The standard of life is the central fact in the dynamics of consumption, and hence is of dominant importance for the theory of economic and social progress. For the purposes of this analysis of utility, however, the point of view of which is essentially static, we have already pursued this subject far enough.

CHAPTER IX

COMPLEMENTARY UTILITY IN RELATION TO THE VARIATION OF UTILITY

If the principle of diminishing utility were applicable with anything like universality and absoluteness, the utility of the marginal portion of income or consumption would vary inversely as the amount of income. The strength of attachment with which a man with a moderate income holds to the consumption of articles which are clearly not indispensable is contrary to that hypothesis. His judgment of their value is doubtless due in part to the influence of conventional social standards upon him, but it is also due, or might be due, to an entirely rational valuation of complementary goods. The fact that the individual's judgment is conventional rather than justified by his own reasoning does not mean that his estimation of the utility of goods essential to his standard of life is any the less reasonable. Viewed in the concrete, there is a stage in the acquisition and consumption of goods within which the principle of diminishing utility does not hold, or at any rate, does not dominate the situation.

It is not enough to meet this argument by limiting diminishing utility to the case of a homogeneous supply. The principle never has been so limited. It is of too great significance in economics to be confined within such bounds. It does apply abstractly to the increase of goods in their most general quantitative aspect, that is, to the amount of possessions or income as measured in terms of the standard of value. A dollar, and a "dollar's worth," has less utility to the well-to-do business man than to the day-laborer. One hundred dollars or one thousand dollars mean much less to the very rich man than to the well-to-do. If these propor-

tions are correct, then diminishing utility holds, in some sense, for income in general and for the goods of which, in the last analysis, it consists.

As a general proposition, assuming the rational ordering of consumption, the good yielding most utility will be first obtained, then the one having the next greatest utility, and so on down. The application of initial units of a supply to the most important uses first and then the progressive decrease of the importance of these uses means diminishing utility. But this situation and the argument based upon it apply, not only to a homogeneous supply, but equally well to a heterogeneous collection of goods in process of being acquired, with the qualification, of course, that the complementary relations of the heterogeneous goods be left out of account. Diminishing utility relates to particular utility. We have here occasion to predicate only that the principle holds for the particular utility of a varied collection of goods as well as for a homogeneous supply.

The variation of complementary utility is another matter. Complementary utility may quite disarrange any calculations of quantitative variation that leave it out of account. Since diminishing utility does not hold for complementary utility by itself, it does not always hold for complementary utility plus particular utility. The standard of life is a case of complementary utility, hence its influence on the variation of the utility of increments of income, so far as such increments mean something for the standard. Diminishing utility does not hold absolutely and step by step. Even supposing the necessities of each recipient are the same, $100 may in the concrete mean as much when added to a particular $2000 income as when added to one of $1500. For reasons stated elsewhere, this situation holds especially for moderate incomes.

Curves are the best means of expressing quantitative variation, hence a discussion of subjective economics can scarcely escape using them. The relation of the complemen-

tary character of successively obtained goods to the variation of their utility may best be illustrated by hypothetical curves. The typical curve of diminishing utility, on the assumption that it expresses the relation described in chapter III, may be drawn as in the upper half of Diagram III.

Now, if we suppose that the additions to the number of goods available for consumption consist of needed articles of furniture instead of further pecks of potatoes or loaves of bread, the addition of these articles will bring utility not merely on account of the uses to which they may themselves be put, but also on account of the greater completeness with which the home is furnished. When the "chunks" of commodity are reduced to like units as to a common denominator, the particular utility proper of each article, that is, the utility of each article in the uses to which it can be put detached from others, will conform to the principle of diminishing utility. The absolutely needed articles will be first obtained, owing to their high particular utility. Others will follow in the order of urgency or need relative to cost. Complementary utility will scarcely count for the earlier half of the articles obtained, though a rational choice will pick them with reference to the future completion of a harmonious group of goods. Complementary utility as well as particular utility may influence the order of purchase of goods later acquired, but scarcely very much, since the amount of complementary utility depends more upon the steps still to be taken to complete the group in mind than upon the particular character of the good. Particular utility will unfailingly follow the principle of diminishing utility. Complementary utility will be supplementary, and in effect a premium upon the completion of the group. The additional or complementary utility will thus operate to modify the course of the variation of utility as represented in the lower half of Diagram III.

There should be no question as to the possibility of the

DIAGRAM III

Possible effect of complementary utility upon the variation of utility producing increasing utility

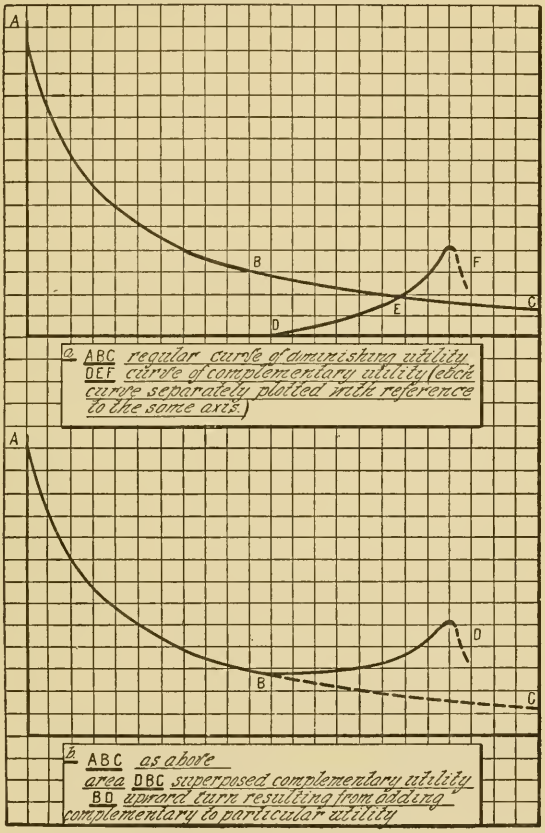
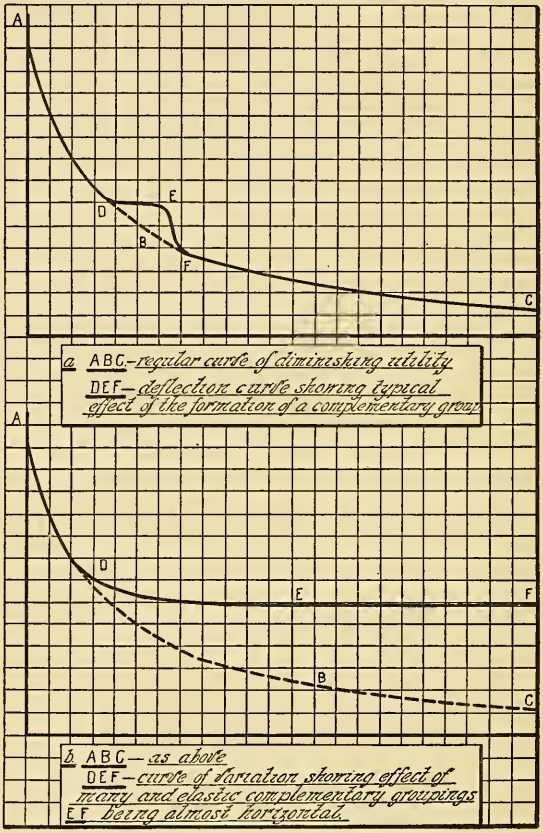


DIAGRAM IV

Possible effects of complementary utility upon the variation of utility amounting to less than the increasing utility.



variation of utility working out this way. The practical significance of such "increasing utility" is evident.

It might be questioned whether the complementary utility belongs to the units to which it is credited. But the increase in the number of goods will none the less mean such a variation in the quantity of utility successively added as is indicated. The apportionment of the utility to the separate units, as their property, is not essential. It is just as easy, or just as impossible, to pick the "first" unit out of a completed supply as it is the economically "last" or marginal unit. The existence of complementary utility is no more dependent upon its inhering in a particular physical unit than is the existence of the initial or of the marginal utility.

As to whether complementary utility is fully taken into account, as particular utility is, in the order of acquisition and consumption, a small portion of it may be so dealt with, that is, so far as a particular good, let us say the seventh of a group of ten, may be also effective to some extent as completing a provisional group of seven. But most of the complementary utility brought by the tenth unit is due, not to its being the particular good which it is, but to its being the tenth of a group of ten. Any preceding unit will naturally have more particular utility, but it is the last to be acquired that brings most complementary utility, because it completes the group, the other nine being already there. Even as regards the seventh unit mentioned above, whatever complementary utility it brings is brought because it is the seventh and last unit of the provisional group of seven. The complementary utility thus made available, while it gives number seven precedence over numbers eight and nine on the ground of degree of utility, may also mean such a superiority over number six that its coming after that number means increasing utility.

It would not be difficult to find economists who would

affirm as a principle without qualification that food is subject to the law of diminishing utility. On putting this proposition into the concrete the economist will most likely confine the illustration to one sort of food, say bread. Then he will generalize on this basis. Let us see if the principle of diminishing utility does adequately formulate the quantitative variation of utility in the case of the successive increments — mouthfuls, forkfuls, or spoonfuls — of a meal. The elasticity of consumption groupings will have the effect of making any illustration somewhat unreal. But this does not affect the principle. It is proposed to apply the principle to a situation that is entirely concrete and, though hypothetical, with no significant elements omitted. It must be granted that the consumer is to control the order in which he is to receive the increments, this being a necessary postulate of diminishing utility. To reduce our miscellaneous foods to a common denominator, we shall have to take a money measure of the unit, say the nickel. Then suppose the choice is of a unit of each of the following: Bread, butter, coffee, dessert, meat, nuts, potatoes, salt, salad, sauce, soup, sugar, and water. In order to keep the particular utility of each unit separate in thought, suppose also that the request for each will be granted only after two minutes, or that this much time must elapse between each request.

The articles being chosen by a hungry man with reference to their particular utility and consumed as soon as obtained, the order might be meat, bread, water, etc. The man would doubtless experience a diminution of utility for each successive article thus immediately and separately consumed. But even he would do better to postpone a part of the consumption in order to avail himself of complementary utility. He would want salt with the meat and butter with the bread.

A man who was merely comfortably hungry might ask for soup first or perhaps water. He certainly would not ask

first for the articles from which he expected the greatest satisfaction. Furthermore, he would probably not care to consume the soup until he had salt, bread, and butter, to go with it. Confined to the above-mentioned constituents of a modest dinner, he would next choose meat, but would not care to eat much of it until he obtained its complements, potato, salad, and perhaps meat sauce. He already has salt. He would then want an increment of coffee, and of sugar, again as complements. Presumably he would want dessert with these. His bill of fare might be arranged thus (the items to be read horizontally):—

		Water	
Soup	Salt	Bread	Butter
Meat	Potatoes	Vegetable salad	Meat sauce
Dessert	Coffee	Sugar	Nuts

But the full importance of complementary utility is not measured by the effect of the strictly contemporaneous combinations that could be made. Soup comes before meat because that is the proper order in which to get the benefit of the complementary utility that results from their being grouped. The entire meal, with its setting, is a single group of complementary goods. The satisfaction obtained from it has little or nothing to do with diminishing utility. The reason is that the utility of the meal is chiefly complementary in its nature.

The illustration is open to criticism in one particular. It might be claimed that the consumer should be compelled to choose each unit as if it were the last in order that he might have a motive to take account of all possible particular utility at each step and would not, for example, ascend from soup to meat. This situation would limit the possibility of obtaining complementary utility, but in a way unjust to it, for planning would no longer be possible. Perhaps the proper modification to be made in the illustration would be to follow the variation of utility as between fixed supplies or combinations of the articles of different

extent chosen from such a list as the one used above. But this would involve such complexities in the illustration as to make it no longer feasible here. As regards the real utility of the initial units of a very limited supply of food, moreover, it is doubtful whether the hypothesis of a fixed supply would not introduce a grave error, as shown in a later chapter,[1] on account of the possible transputed character of such utility. Certainly complementary utility would be a factor in the choice of marginal units after the fear of not having enough to satisfy exigent need was passed, and sometimes it would be highly enough appreciated to modify the course of the utility curve radically. Additions to existing supplies, furthermore, may be made in the light of new knowledge of complementary possibilities, and even though this is a dynamic factor, complementary utility should receive credit for it. Perhaps this new light means no more than the ingenuity necessary to find any uses at all for the later units of the abundant supply for which diminishing utility is of dominant significance.

That the appropriate association of different foods has a very great deal to do with the satisfaction obtained from them every one knows who has sat waiting in a restaurant for a group to be completed. That the groupings will be different according to personal idiosyncrasy adds another to the difficulties in the way of finding illustrations that will be generally understood and appreciated. But the significance of complementary utility is not therefore less great, but only the more likely to be not duly recognized.

An illustration along the lines of the dinner might be worked out for the furnishing of a house.

In order that the principle of diminishing utility may be overborne, it is not necessary that the effect of complementary utility should amount to absolutely increasing utility, though there is no reason why it cannot on occasion. The hump on the curve of diminishing utility may be there still,

[1] Chap. XI.

even though its upper edge be no more than horizontal. This is illustrated in Diagram IV, opposite page 103. Of course we are assuming that the principle of diminishing utility works with a degree of regularity, and that the rate of decline is not arbitrary.

That the principle of diminishing utility is often overborne depends upon the fact that consumption groupings are provisional and elastic and that there is always likely to be, so to speak, a stock of complementary relations available and waiting for the accumulation of purchasing power. Complementary utility is not something obtained once for all. Its accessions educate to new outlooks and further ambitions. It is thus a factor in the estimation of most purchases, though not always highly important.

The effect upon utility of the obtaining of a complementary good may be paradoxically described as analogous to the addition of 2 plus 2 to make 5. Certainly the sum of the particular utilities of the complementary goods does not equal the utility of the group as a whole. It is only in physics that 2 plus 2 equals 4, no more, no less. In psychical matters, under the operation of the principle of diminishing utility, 2 plus 2 equals only 3, or perhaps 3½. But it is equally possible for 2 plus 2 to amount to 4 or 4½ or 5, provided the second 2 is a complement of the first. We are too much tied down to the objective and the physical in our conception of quantities and quantitative relations, and if we escape that, we too often fail to perceive the bearing of the complementary relation on the variation of utility, because to observe that relation we need to have the group already formed before us. We are thus too likely to contemplate the relation merely as a result, instead of as a process, thus missing the variation of complementary utility.

This reasoning, according to which 2 plus 2 may equal, not only 4, but also either 3 or 5, may appear to the reader fallacious. Formally, so it is. But the idea nevertheless is

practically sound and its mode of expression pertinent. The 2 and 2 are of course physical objects. The sum or result of their combination may be either physical or psychical. When it is psychical there is no reason why it should be invariably proportionate to the number of physical units rather than proportionate to less or more than their sum.

For the study of the quantitative variation of utility, it is the effect of the introduction of the completing good that is important. The group once formed, the last acquired complement loses its distinction, and the complementary utility obtained is correctly thought to be no more connected with it than with any other member of the group. If there is a "law" of increasing utility, it is in a sense dynamic in its nature. But this is equally true of diminishing utility. A merely static reckoning with particular articles of consumption need take account of neither. But in this sense all expenditure for goods that are not promptly destroyed by use is dynamic. The furnishing of a house from the income of a newly-married couple is not maintenance, it is development. Even the consumption of food among the comfortably situated is not usually entirely static. The chief dynamic phenomenon of consumption is, perhaps, this founding of new groups of complementary goods.

It is natural that the effect upon the course of utility of the adding of like goods to the number of those available for consumption should first attract attention, and that it should still cause neglect of the effect of the complementary relation in consumption. It requires unusual importance of the groupings and a very special situation to produce such a degree of divergence from the typical course of utility that added increments of goods shall have an *increasing* utility, though that effect is possible. Nothing less than such increasing utility could attract the attention of those who find no law for the rate of diminution of utility and accept without question any downward rate or succession of rates.

The scope of complementary utility, however, is not confined to its extreme effects, though its tendency to counteract diminishing utility is thus best illustrated. Since homogeneity and correlational or complementary heterogeneity may both hold as different aspects for the same collection of goods, both laws of variation may be conceived to be coincidently applicable. Complementary utility is thus manifested as a cause of upward deviation from the regular form of the curve of diminishing utility. But this relatively upward direction of the curve may still be absolutely downward or merely level. The suspension, rather than the reversal, of the diminution of utility is what is to be expected.

As compared with the upward variation due to complementary utility, diminishing utility may be said to be more objective or demonstrable. This may be because the latter is favored by the somewhat extraneous fact that there is such a thing as physical homogeneity of goods, while the peculiar kind of unlikeness required for the complementary relation is altogether dependent upon psychical factors. Homogeneity may be such only from the point of view of the consumer and still occasion the diminution of utility. But the evidence for the principle of diminishing utility is not mainly of this less convincing sort; while the counteracting influence or opposite course of complementary utility always requires attention to something less close to the physical. Only in the field of production may we find clear and thoroughly objective cases of the complementary relation, and here the end and criterion of the interrelation is technical, having no direct reference to satisfaction. Here also substitution and the instability of groups obscures the significance of complementary interdependence, at least if we have in mind concrete groups instead of the interdependent "factors of production." If we have to assume a given state of engineering knowledge and unchanging relative prices in order to make complementary

relations in production stable, even that is easier than to assume as much in the field of consumption and to assume also a standardized and constant affective valuation. Physical likeness is a hard and fast fact while complementariness is a matter of judgment and taste. The corresponding principles of the variation of utility partake of these characteristics.

There is a better argument for the underlying character of the principle of diminishing utility. For an abstract kind or element of utility, like time-keeping utility, diminishing utility must hold unqualifiedly. The utility of the normal sitting position — as sharply defined and distinguished, not only from standing and reclining, but also from various intermediate positions such as may be assumed in a rocker, Morris, or swivel chair — is more certainly subject to diminution than is the utility of the genus chair, with its many species. The complementary relation and the resulting possibilities of increasing utility, on the other hand, require concrete objects or acts; for example, the chair and the appropriate occupation of it as to place and time. Abstract elements of utility as such do not appear to be complementary to one another. It is at least safe to say that they do not get beyond mere contrast effects. The complementary or part-utilities of the members of a group are only potential until the group is formed. The several goods must be combined in order that the complementary kind of utility may exist. Of course the members of the group will have also their independent particular utilities.

Particular utility, furthermore, practically, if not absolutely, always underlies complementary utility, and for particular utility, so far as it can be separated, diminishing utility holds in all cases where consumption is rationally ordered. A congeries of goods always has a collective particular utility, whether or not it has also complementary utility due to internal relations.

One cause of the obscuration of the effect of the complementary relation on the variation of utility as applied to ordinary concrete groups is the fact that, once a group is completed, the utility of added goods may be expected to drop rapidly enough to balance the previous retardation of decline and to make the effect of the complementary relation temporary, or only a "hump" on the curve of diminishing utility. This double effect is less of an objection than it seems, for these groupings in consumption are elastic and multifarious. In practice it is to be expected that consumption will proceed up to, but not beyond, such a sharp drop in utility, and, the one group having been completed, some other group will be attended to. Within the zone of moderate expenditure there is no end to the possibilities of improvement of groups by additions and modifications.

Since complementary utility is always the utility proper of some group, it may be said that diminishing utility holds for the utility of the successive groups of the same kind, and in this way for complementary utility. The consumer is supposed to increase the number of this kind of group until its utility, including the complementary part, becomes marginal. Doubtless this would hold if the consumption of the individual proceeded to the formation of several like groups. But the maxim of variety is, "One of a kind is enough." The more important groups are, moreover, so large as to be almost inclusive of the entire consumption of the individual or family. A group is typically a sort of department of consumption. Duplication of such a group must be exceptional, though it is conceivable for the economy of the very rich. Most people have to be content with one house and one outfit of furniture. Even where duplication is possible, the new group is likely to be more or less complementary to the old. A gentleman's country home is not so much another unit added to his supply of houses as it is a complement of his city house. In general,

one group of a kind suffices. There is no such thing as a supply of homogeneous group-units with a marginal group for the least important use.

The principle of diminishing utility applies to complementary utility only in the sense that the group richest in complementary utility, *other things being equal*, will be formed first, the next richest second, and so on. But this amounts to saying that the principle of diminishing utility has no practical, and scarcely any theoretical, significance for complementary utility, however absolutely it applies, of course abstractly, for particular utility. Among other things that must be equal are the size of the groups, the particular utilities of the parts of the different groups, and also the relation between costs and particular utilities. These things cannot be presumed to remain the same through a series of groups. The situation, furthermore, should not be complicated by relations between groups, a thing very frequent in actual consumption, so frequent in fact that the very supposition of a mere series of groups, as opposed to a group of groups, is quite artificial. Therefore complementary utility may without qualification be said to obey a different law from that of particular utility. Only in so far as the group is small enough and fixed enough to be thought of in market transactions and recognized in the economy of many consumers will there be adjustments of the market to take account of complementary utility as there are in the case of particular utility. That demand and the market will be unaffected by complementary utility is, however, a different proposition.

Complementary utility, as has been stated before, does not reside in or adhere to any particular good. This fact of itself must defeat the market and marginal conception. It is for similar reasons that super-marginal utility is not taken account of in the market.

But, though complementary utility does not diminish according to the variation law, it does not follow that it

can go on increasing forever and be unlimited in amount. It is limited by capacity to enjoy. While its limit is more elastic than that for any other species of utility, and while it is the most genuinely fruitful recourse of pampered and jaded sensibilities, the capacity of no individual is equal to exploiting all its possibilities, especially as its enjoyment is so little passive and so largely exigent of active attention and systematic interest. Especially for the person whose time is not mainly leisure time, there is need of checking the development of complexity of life in this as in other respects.

Adequate attention to complementary utility, we conclude, requires a decided modification of current conceptions of the character and of the variation of utility. Diminishing utility, it is true, retains its fundamental importance. In the realm of very general (and therefore very abstract) principle it counts for more than the complementary relation. But, in concrete dealings with goods, degree of complementary utility is of quite as much practical importance in motivation and choice as is the variation of particular utility. Here complementary utility occupies the foreground. That its scientific interest has not been duly recognized may be attributed to the fact that the viewpoint of the economist has usually been that of the merchant rather than that of the consumer, and also to the fact that the economist is seldom much of a psychologist. The complementary relation is so significant for degree of realizable utility that it should be given as large a place as diminishing utility itself in an adequate discussion of consumption and of the variation of utility.

CHAPTER X

IMPUTATION AND TRANSPUTATION OF UTILITY

TRANSPUTED utility has been described above as due to a relation of one good to another such that the full enjoyment of the second is felt to be practically and exigently dependent upon the control of the first. The transputed utility is thus superposed upon other kinds of utility, included among them being complementary utility as ordinarily or equitably attributed to the various members of a group. This conception is different from the Austrian conception of imputation in so far as that does not distinguish merely complementary utility from the stronger case. The reason for this is doubtless the fact that the Austrians give attention to utility only as the foundation of economic value and then proceed to study the imputation of value as between intermediate goods, where only value and not utility, in so far as super-marginal, is significant. In so far as economic value is founded upon complementary utility, utility, since it is of direct significance in the market, is also imputed. Whether we may say that it is also transputed would depend upon whether the concentration of value upon one or few members of the group would signify anything of human interest, that is, mainly as regards the character and benefits of consumption. The one case where such imputation does become transputation is where labor gets relatively little of the joint product of all productive agents and the material elements get most. But let us first consider imputation in the usual way and in its established field.

The clearest case of the imputation of value is to be seen in the apportionment of the commercial value of products among the factors of production. The interrelations of the

available supplies of productive agents result in the imputation of the value jointly produced to the various agents in proportion to their relative scarcity. Under the name of joint demand, this situation had been described before Carl Menger's time, but the Austrian conception is so much more adequate as to be entitled to the honors that are due to scientific discovery. The problem of distribution is a problem of imputation resulting from the divided control of means of production. The relative value of complementary agents thus separately controlled and constituting conflicting social interests is a very practical question.

The simplest case of imputation in production is that where all the means but one are free goods. This is the ideally primitive condition, where a man has to consider only the cost of his own labor, since his materials are free of other costs and his productive efforts are unassisted by those of other men. Under such circumstances all the value of the product is imputed to labor. But at the present time the laborer no longer receives "the whole produce of labor." In the countries most advanced in civilization, free goods are of decreasing economic importance, and production is typically joint-production, involving the efforts of many laborers, directive and other. Under such circumstances the commercial value of means of production, which is imputed value to such an extent that any other value is hardly to be distinguished, varies inversely as replaceability. Some kinds of laborers, moreover, are among the most easily replaced means of production. The theory of rent, both of land and of superior ability, if we may speak of the "rent" of ability, is also a corollary of the doctrine of imputation. The peculiarity of this part of income from property depends upon two facts, that the supply of land is relatively fixed, and that the land is relatively irreplaceable. So much for imputation in the sphere of commercial value.

Menger, Wieser, and Böhm-Bawerk fail to bring over these principles of the complementary relation and of imputed value from the sphere of production and sale into that of immediate utility. The principles are to be considered the outcome of subjective laws of the enjoyment and estimation of goods under limiting conditions of absolute and relative supply. They should therefore find expression in the field of consumption. The complementary relation has already been shown to be of an importance in this field hardly to be overestimated. Imputation, or the special case to which the distinctive name transputation is here given, is in its peculiar way hardly less significant.

In the Austrian conception "imputation" (*Zurechnung*) is used to designate the process by which the value of a joint product of several factors is apportioned between them.[1] The contrast between this process and the division of a common store between contributors in proportion to the physical contributions they have made to it is highly significant. The analogy to the judicial imputation of guilt in a difficult case when the physical facts relating to a misdeed are known is instructively developed by Wieser.[2]

[1] According to the etymology of the word, the term "imputation" might cover the attribution of utility or value generally, without regard to joint effects or the complementary relation. Or it might have the sense of injurious or false attribution, for example, the comprehensive remedial effects "imputed" to whiskey by the person with a special appetite for it. Patten (*Dynamic Economics*, chap. XIX, "The Imputation of Utility") states various "laws" of imputation (attribution) of utility in consumption, — a problem which the present essay no more than touches (cf. p. 120). The present writer does not use the term in this broad sense but supposes that imputation is not only a phenomenon of the complementary relation but also implies a definite result such as is obtained in the field of economic value and distribution. Hence utility in his view is imputed only when it becomes quantitatively definite as economic value. This is entirely in accord with Austrian usage.

On p. 121 of *Dynamic Economics* it appears that Professor Patten considers as imputed only the complementary utility of a group over and above the particular utility of the individual units. The theory of transputation has the same starting point.

[2] *Natural Value* (translation), 1893, book III, part I, chap. II. Similarly in his *Ursprung und Hauptgesetze des wirtschaftlichen Werthes*, 1884, p. 172.

Imputation is essentially a mental operation, a phase of the judgment of value. But it should be noted that the attribution of utility to an object or collection of objects is just as much a judgment of value as is the offer to pay a definite money price in exchange for it. In other words, value in its broadest sense is a genus of which utility is a species. When imputation is said to be a phase of the judgment of value, there is a presumption that it has significance for utility and consumption as well as for economic production and distribution. But the peculiarities of the conception in this newer application make it advisable to use a somewhat different term, that is, "transputation."[1]

The current idea of imputation in distribution assumes that all value to be divided among productive agents is imputed to one or another of them, and thus all may be called imputed value. This is different from our conception of transputation in consumption, according to which only some portion of the complementary utility of a group may ordinarily be transputed to one member. In consumption it is not true that all the complementary utility of a group is imputed to one or more of its several members, nor that the good favored has only the utility that it derives from imputation. But the current conception of imputation in distribution and the writer's use of the idea of transputation in consumption differ from each other mainly in that the whence and not merely the whither of the utility in question is taken into consideration in the second case.

Under modern conditions of production, which require complicated processes and implements and highly developed skill, it is clear that the value of an instrument (or of a laborer) apart from complements would be practically nil. Hence all the utility or value of productive agents may be considered imputed. Many consumption goods, however, can be put to some use with only free goods as com-

[1] Defined and discussed on p. 14.

plements, or even with no complements at all. The apple and other fruits are often eaten as they come from the tree. The majority of consumption goods can be enjoyed, though to less advantage, without the help of other goods. But the individual or "particular" utility of a productive agent is approximately zero. On the other hand, super-marginal utility of any sort, including unimputed complementary utility, has little or no significance in the field of intermediate goods. Here value is a sufficient measure of utility. The initial utility of such goods might be much greater than their actual marginal utility. But the relatively liberal supply causes a reduction of prices for the corresponding final goods such that whatever high degree of utility they may have for their consumers is not reflected through the market to the intermediate goods. Whether it might not still be traced from a more general and social viewpoint we will not undertake to consider. It makes no difference as regards the value of productive agents whether some of their products achieve a high or a low degree of realized utility. For the individual consumer, on the contrary, it does make a difference whether he can realize much or little utility from what he acquires, regardless of the fact that he will pay as low a price as the market will permit. Thus imputation operates somewhat differently in consumption from the way it does in production, or perhaps we should say that imputation has no such comprehensive scope in consumption as in production and that, within its sphere of influence, it acquires new interest as usually constituting transputed utility.

The distinction between transputed utility and utility proper is worthy of further emphasis at this point. Utility proper is due to the intrinsic qualities of a good (or of a group of goods), of course with reference also to its own supply. But the utility proper of an individual good is not practically dependent upon any relation, quantitative or other, to objects of different kind, or to the qualities or the

supplies of such objects.[1] Transputed utility, on the other hand, derives its being from a relation to other goods. It is thus hardly to be considered utility in the full sense, or rather it is not utility rightfully belonging to the good to which it adheres. It is a transferred utility. It is taken from the utility of other goods and added to that of the good favored by transputation. The utility of the group is of course determined by the principles that govern the utility of any complete good.

The transputed utility of a complement is part of the proper utility of a complete good or group. This is also the case, perhaps in a higher degree, with the merely complementary utility of such an article. Merely complementary utility may be apportioned among the members of the group, but, unless it becomes transputed and ceases to be merely complementary, it is not so apportioned as to give to any of them a firm hold on a definite share of the peculiarly group utility, or, so to speak, a proprietary right in it. Transputation, on the other hand, shunts off to one member of the group more than its proportion of the joint utility. The utility so shunted expresses itself in a definite value and may pertain to the favored article for some time, as in a state of equilibrium. The distribution of merely complementary utility is as indefinite as is the sense of proportion. In considering the utility of a given article, however, the distinction between the merely complementary and the transputed portion may be more definite. Doubtless this sense of proportion will be somewhat guided by the importance of the complement for other uses, especially familiar isolated or independent uses. The difficulty of drawing a sharp division line between transputed and merely complementary utility does not make the distinction less important. The reader may, if he will, consider them two aspects of the same thing.

Transputed utility may be described as monopolized

[1] Cf. pp. 12–13.

complementary utility. But this is not the best way of characterizing what happens to the surplus above particular utility in cases of transputation. Although it is true there are various degrees of monopolization, still we should not be inclined to call by that name a small disturbance of the balance between different claimants to complementary utility. Transputation seems to be the more accurate, as well as the more distinctive, term.

This brings us to the question as to how to determine what is a balanced and what an unbalanced attribution of complementary utility among the claimants to a share. The author is doubtful whether particular utility outside complementary groups affords a satisfactory criterion, even conceptually, and this is certainly not a good working solution. There remains the possibility of a physical criterion. But no definite and hard and fast criterion is indispensable where the whole matter hinges upon the sense of proportion. Moreover, to develop in this connection a scale of physical qualities with reference to the degree of their realization due to complementary groupings is not to be thought of. Tables of the nutritive values of foods are suggestive. But they should be supplemented by tables of tastiness. The inadequacy of the present schedules and the difficulties of the problem are indicated by the fact that such tables assign no value to water. Certainly the proportion of water must have a good deal to do with ease of digestion and assimilation, and thus with the nutriment utilized. The tables in fact do not rise to the plane of the complementary conception, and their theory does seem to be influenced by the less adequate practice of imputation. The water, of course, may be obtained in some other form freely and practically gratuitously, while the "nutritive" elements have to be paid for.

Transputed utility, unlike utility proper, is always and entirely equaled or matched by economic value. It is always a "least possible" or grudging utility, that is, a

marginal utility. This is only another way of saying that it is always economic value. It may as far exceed the actual contribution to enjoyment made by the object which possesses the transputed utility as the market value of necessaries may exceed their contribution to satisfaction when their price is forced up under untoward conditions. Transputed utility is complementary utility that has become value. But transputation is, as regards the particular article favored, transputation of value first and of utility secondarily. Imputed utility follows in the wake of value, while value usually follows utility.

A superabundant good first acquires value by reason of its becoming scarce relatively to the demand for it. Greater scarcity means greater value, still with reference to its foundation in utility proper to the good. Then if it is much combined with other goods, and if its supply is smaller than the supply of these other goods, it may come to have an accession of value transputed to it by reason of its strategic position as compared with its complements. There is a great difference between the effect of transputation upon the course of the value of a particular good, and the ordinary effect of decreasing the supply. In the latter case the curve of diminishing utility is simply retraced upwards, or rather uncovered, and its form remains regular. Transputation, however, distorts it by a sudden steepening of its upper portion until it becomes almost vertical. Or, if transputed value is destroyed by an increase of supply, the diminution of utility is very abrupt until an equilibrium with the supplies of other needed goods is attained.

The distinction between transputed value or utility and a high degree of utility and value not due to transputation hinges upon the difference between the two sorts of scarcity connected with the two cases. Scarcity in some sense and in varying degree is the basis of all economic value. It is scarcity which makes goods technically "economic," as

opposed to "free" goods. But in the case of the reversing of simple diminishing utility through the diminution of the supply, the scarcity is — aside from the relation to wants — absolute. It would ordinarily be expressed by indicating the supply of the goods in absolute numbers compared with the need or effective demand, the latter being either tacitly understood, or likewise expressed in absolute numbers. Scarcity involving transputation, on the other hand, is relative, even apart from that relation to human wants which is the essence of all utility. There is here a relation between the supply of the good whose value is increased by transputation and the supplies of the other goods which are its complements. This relation is best expressed in terms of proportion. It is this *relative*, or doubly relative, scarcity resulting in transputation that gives, or rather superadds, a distinctive characteristic to the curve of diminishing utility. As already stated, it steepens the curve at its higher portion and increases the apparent area of super-marginal utility wherever its influence is felt. Its influence is felt wherever supply is, relatively to the supplies of associated goods, scanty or decreasing instead of abundant or increasing.

Transputation has so far been considered mainly from the side of the good upon whose presence the completion of the group is dependent, that is, with reference to the accretion of a surplus, or a transputed, utility to a recipient good. But there is another side to the process. The utilization of a particular good which is available in abundance and whose intrinsic qualities seem to entitle it to high estimation may fail because necessary complements are unobtainable. It will then have no value. Desert soils are frequently of great natural fertility, but they are not valued until a well or other source of water is available. If the needed complements are obtained, the value of the group is imputed to them — transputed we should say if the emphasis were on immediate utility — until scarcity or

cost gives value also to the good previously superabundant. A member of a group may be said to have utility transputed away from it when its peculiar fitness for this group relation is, on account of its abundance, unrecognized or inadequately recognized in terms of value. Knowledge of how to utilize the good effectively may, in a broad sense, be the wanting complement.

The cheapening or improvement of other goods that can be applied to uses in conjunction with the commodity in question tends to increase its value, that is, to favor transputation of utility to it. Cotton has probably no less multifarious and important uses than rubber. But, in their complementary groupings, value is largely imputed to rubber, while it is probably imputed away from cotton because of the relative abundance of the latter. Many things of daily use have their value enhanced by the cheapness of cotton, while the use of other things is hampered by the expensiveness of rubber, hard and soft, as it enters into the construction of mechanical contrivances, toilet articles, etc., of various sorts. Utility is transputed away from salt, while it is doubtless transputed to some of the rarer flavors, for example, the flower essences used in confectionery. A broader view, however, emancipating itself from the fetich of the market-place, will recognize the great complementary utility of salt — a complementary utility of which it should not be in thought dispossessed merely because, in uses of which the average man has no direct experience, its marginal utility is very low.

Because of the possibilities of imputation of value and transputation of utility to or from a good whose utility is chiefly complementary, more than usual elasticity of supply is necessary to maintain an approximately steady and constant value for such a good. This fact is especially interesting in its relation to the value of the agents of production, with which, however, we are not here directly concerned. Ease of substitution, or the easy finding of equivalents,

amounts to the same thing as elasticity of supply. The same elasticity which keeps the value of a merely complementary good steady tends also to keep it low. Since there appears to be no reason why such goods should in general have a specially elastic supply as compared with other goods, a given change in the amount of the demand for a merely complementary good may be expected to produce a greater change in value than is the case with a similar change in the demand for a complete or self-contained good. A good of the first description may gain much by a comparatively slight relative scarcity, but it may quickly lose as much by a change of conditions in the opposite direction.

The value of complements, in so far as it is involved in transputation, will thus generally be rather unstable. High valuation stimulates substitution, and a comparatively slight impairment of the monopoly of a complement may take away most of its transputed utility. The instability and insecurity of the value of a complement are ordinarily proportionate to the degree in which its utility is due to transputation. Only in exceptional cases, where the increase of its supply is peculiarly difficult and where its usefulness is so fundamental or so unique as to place it beyond reach of competition through substitution, will a high degree of transputed utility be stable. Secure it can scarcely ever be said to be.

The limitations upon imputation and transputation — which do not limit complementary utility — are replacement and substitution. They are usually very effective. They are, however, much more effective for a narrow species of goods than for broad classes. Necessaries as a class are quite irreplaceable.

CHAPTER XI

THE TRANSPUTED CHARACTER OF THE INITIAL UTILITY OF NECESSARIES

TRANSPUTATION is especially important in relation to the theory of the utility of necessaries. Necessaries, it is said, being the means of preserving life, may, under conceivable circumstances, have a value equal to that of life itself, and therefore infinitely or indefinitely large. On the side of economic valuation it is perhaps a tenable proposition that necessaries may be worth the full value of life. And that is indefinitely large, though not infinite. Does this value, then, always suppose utility, and a utility at least equal in magnitude to that of the value? For some purposes the answer is affirmative: The utility of necessaries is equal to their value. But even without such warning as is contained in the foregoing discussion of transputed utility, one must feel that the utility involved is not quite the same in its nature as that utility which is the source of man's ordinary enjoyments. Utility is ordinarily and rightly thought to be proportionate to satisfaction. The supposedly supreme degree of utility of necessaries to a person in straits, for example, the degree of utility of food to a starving man, calls for critical examination.

As a matter of logic, in the first place, it is not true that one of a number of necessary means to an end must be valued as highly as the end itself, though something like this is true of all the necessary means combined. These necessary means are complements of one another. If alongside the chief means any of the other factors can establish a claim to consideration and to value, there is just so much less left to be attributed or imputed to that which is felt to be *the* great precondition to the end.

It is not sound to argue that because without life one cannot have what life contains, therefore the importance of life must exceed that of its contents. What gives this argument speciousness is the fact that life is worth more than any one of the elements of which it consists. But this proposition is true only on the assumption that there remain other elements that are worth something. Life is at most worth only what it contains, or, strictly speaking, something less than what it contains, since the process of imputation itself costs something. Existence in the abstract is mere potentiality. It is empty space, or rather empty time. It is merely room for something else. Life is abstract opportunity, but its value depends upon what constitutes its concrete offerings. Not mere life itself, but the good content of life, is what is desirable and desired. Life itself has no value except as means to an end. The mere means to life are therefore still more remote in the chain of values and their value is entirely contingent.

The value transputed to the means of preserving and sustaining life, that is, such part of their value as is not proportionate to the amount of satisfaction directly obtained from such goods, is subtracted from the value of other things that life can give. The great value attributed to the necessaries of life in situations of extreme exigency is transputed value and transputed utility, not utility proper.[1] But of course transputed utility is just as good a basis for mere economic or exchange value as is utility proper. Hence the great possibilities of a rise in price for necessaries, for example, in a besieged city. But from the point of view of consumption and enjoyment, the situation as regards the satisfaction obtainable, and the real utility, are very differ-

[1] Cf. Professor Patten's conception of "absolute" utility (*Dynamic Economics*, p. 40), which is parallel to, yet curiously different from, the idea developed here. The viewpoint of the text is more nearly anticipated by Johnson, *Rent in Modern Economic Theory*, 1902, footnote on pp. 12–13, where credit is also given to Hobson, *Economics of Distribution*.

ent. Not all utility can logically be transputed to food, since not all other utilities are free, or without economic value. A man may rationally give all he possesses for food to save his life because of what the future means to him in the way of opportunity to create and enjoy other utilities. But if he were to forego all future utilities for the sake of barely preserving life, he would not be acting rationally and economically, though he might be impelled to such action by an instinct that was not created to cope with any such situation. No man could rationally sell himself into unmitigated and hopeless slavery.

The transputation of utility to necessaries is instinctive, and the effect upon feeling of the means of preserving life may therefore often be immediate and intense. Instinctive appetite may cause the transputed utility of necessaries to be experienced as a very great immediate utility. But, though the process of transputation is instinctive, the degree of value attained by necessaries under unusual circumstances is much in excess even of a possibly enhanced immediate utility due to heightened appetite. Extreme exigency, in fact, is likely to impair the possibility of immediate enjoyment. It is moderate hunger that is "the best sauce." Moreover, if a person's circumstances are chronically or permanently straitened, the borrowed utility also, that is, the utility instinctively transputed to necessaries, is, as we have seen, not rationally transputed. The direct individual contribution to happiness made by mere necessaries may be negligible. Their utility proper may be next to nothing.

The relative importance of different portions of an individual's income, as well as of different magnitudes of income, should be considered in the light of the principle of the transputation of utility to necessaries. There is a particular portion of income which may be distinguished as more especially devoted to utilities proper. This is the portion just above what is required for necessaries, a stage

beyond which the income of many individuals does not reach. We may call this free or super-minimal income, either of which terms is self-explanatory. This is the shiftable or disposable portion of income above the necessary provision for bare subsistence. Luxury in certain forms is the most developed phase of free income or free expenditure. But the demand for comforts exhibits more clearly the tendencies of ordinary free income, unmixed, on the one hand, with transputed elements of utility, and, on the other, with adventitious elements. The character of the distinction between free and minimal or necessary expenditure is also suggested by the division of wants into existence wants and culture wants, with the implication that the latter have greater intrinsic significance.

Without free income all utility tends to be swallowed up by transputation to necessaries. Hence utility proper has little scope except where there is enough income to include some free income. For this reason a man clings obstinately, as should be expected, to certain "indulgences," even at the cost of not obtaining some necessaries and of thus impairing health. Man seeks ultimately only satisfaction, or the things that give satisfaction. He does not want mere life, but the good of life. A man will often sacrifice in some degree the means of subsistence to mere sources of excitement and pleasure. The whole series of so-called stimulants, from tea, coffee, and cocoa to malt drinks, wine, and spirits, in their various forms, belong in this class of utilities. These direct nerve-stimulants are especially subject to abuse by the very poor, who usually have relatively small resources, mentally as well as economically, for the finding and utilization of more durably fruitful methods of applying super-minimal income.

It is not always super-minimal income that is used for stimulants and excitants. As a cynic might say, a man can do very well without some of the necessaries of life, but he has "got to have" a few luxuries. This philosophy is

neither unknown among the masses, nor unuttered. For such reasons the curve of demand for tobacco and that for alcoholics have the steepness indicative of an inelasticity which some economists have supposed characterized exclusively the demand for necessaries.[1] Cattle, sheep, and swine, and also some human beings, are doubtless in their best state of "mind" when living a merely vegetative existence. If they have enough to eat, are mildly treated, and are induced to take exercise or labor hardly more than enough to keep their digestion in good shape, they are doubtless happy, perhaps almost "as happy as a clam." But they are not living a human life. For a human existence and for human welfare, free income is more important, though not more fundamental, than the necessaries of life. One cannot build a house without first laying foundations; but the foundations derive all their importance from the structure raised upon them.

The gist of the matter is that transputed utility should not, strictly speaking, be called utility. In case of the transputation of utility to necessaries, it is measured, not by what is positively contributed to consumption or enjoyment, but by negative or destructive power over the health and life which are the foundation of all enjoyment. What is the true utility of food to those to whom it merely continues an existence which yields nothing but privations? And what would be the rate of diminution of real utility, supposing the capacity of such people for feeling remained unimpaired, if they were given first enough of the necessaries, and then some of the comforts of life? For normally constituted human beings, as distinguished from such as live in a stage of brute instinct and appetite, no diminution of utility results from an increase of goods which provides

[1] Cournot, in *Mathematical Principles of the Theory of Wealth* (translation), p. 46, definitely associates the most superfluous and the most necessary goods as regards the character of their demand curves. But he relates the former to ideas of adventitious utility.

comforts where before were merely necessaries. It is only free income that affords any considerable means of enjoyment. In other words, it is only free income that has real utility.

CHAPTER XII

CONTRASTED SIGNIFICANCE OF MERELY COMPLEMENTARY UTILITY AND TRANSPUTED UTILITY

So far we have not made an issue of the relation between complementary utility and transputed utility. The difference between their relations to welfare has only been incidentally suggested. It may seem that complementary utility is of importance only when transputed. But it is only for the market that this is true. In the larger view, and in the field of consumption, there is a striking contrast between merely complementary utility and transputed utility.

In merely complementary utility the peculiar group utility is vaguely, if at all, apportioned, or apportioned without discrimination, among the members of the group. Transputed utility, on the other hand, is definitely and forcibly assigned to particular members as economic value. Only on such terms is the article that is favored by transputation to be obtained. In order that all complementary utility might be transputed and become value as well as utility, while remaining evenly apportioned throughout the group, it would be necessary that each and all of the supplies of the different members of a group should be so adjusted that the marginal utility of each member would absorb the complementary utility in proportion to its part in the group. The supplies must be neither too great nor too small to meet these requirements, and this adjustment must be stable. The coincident and enduring realization of all these conditions is inconceivable. Hence the complementary utility may be assumed to be always in excess of the transputed utility based upon a particular group relation. In other words, not all complementary utility can be transputed or imputed as commercial value.

Merely complementary utility has little relation to the market, although it has much importance in a well-managed private economy. The marginal utility or value of an important article of food is likely to be determined chiefly by some relatively unimportant noncomplementary use, as for example in the case of salt. The utility of a pinch of salt, though it is not wanted by itself, is out of all proportion to its cost. Bread, also, because of its complementary utility, contributes much more to enjoyment than, in proportion, to its commercial value. Potatoes alone, at least the typical ripe, mealy, and rather tasteless kind, would be very unsatisfactory food, yet for many no important meal is quite complete without them. But their commercial value is proportioned rather to their particular (marginal) than to their complementary utility. The enjoyment obtained by well-chosen combinations of such articles is therefore in general "clear gain." The complementary utility is super-marginal.

Complementary relations are flexible and adjustable. The elasticity of demand is largely due to this fact. This flexibility of complementary relations is the great means of preventing the imputation or transputation of the resulting utility and the making of it marginal. If the quantitative relations within the group can be adjusted to the conditions of supply, or if new components may be introduced — supposing either alternative costs less sacrifice of super-marginal utility than results from transputing it as economic value to the relatively scarce articles — such an alternative to transputation will be adopted, at least in so far as habit and inertia can be overcome by intelligence. Thus the super-marginal character of complementary utility will be in large degree preserved. Some slight super-marginal utility is sacrificed — through the less perfect fitness of the substitute — in order to prevent a greater sacrifice by way of transputation.

On account of the flexibility of the complementary re-

lation, the measurement of the utility of a complement by means of relative replaceability, or by the loss incurred in going without it, is appropriate only in the field of production, where imputed value is the significant phase of the complementary relation. The limit of the commercial value of a complement is the difference between the value of the complete group and its value without the particular complement. The value of the group less the complement in question will depend upon the cost of a substitute, both in direct outlay and in inferior suitability. But these are all matters of marginal utility and market value. Utility, however, is more than marginal utility; and especially complementary utility is more than economic value, or rather quite different from it, tending even to escape commercial reckoning altogether. Complementary utility is proportional to contribution to satisfaction over and above the contribution of particular utility. Complementary utility thus depends upon suitableness only and not upon indispensableness. Replacement and substitution do not merely check transputation, they defeat commercial measurement of complementary utility.

The view that super-marginal utility does not affect and is not affected by marginal or market utility is subject to qualification. The amount of complementary utility, it is true, has no relation to the marginal utility of the goods involved, except in the case of the commercial grouping and sale of the complete good — which is more conceivable than practicable — and, for the rest, only in so far as the complementary utility becomes in part marginal utility by transputation. But, at least from a dynamic point of view, the amount of complementary super-marginal utility does affect indirectly the amount of goods demanded and hence their marginal utility.

As it is true that in general the economic rent of land does not produce high prices for raw produce but is the effect of high prices, so a large amount of super-marginal

utility is in general an effect of the lower prices of articles of consumption. But in the case of land, its use for house plots and lawns makes it less possible to use it for the raising of wheat, hence the rent of wheat lands must be higher than it would be if wheat did not have to compete with other uses for the land. In order that the area of wheat land may be large enough, other and presumably somewhat inferior acreage must be resorted to, whereas, if land were used for wheat cultivation only, the area actually devoted to homes might have served the purpose better. The high degree of utility of land for the latter purpose, therefore, does affect the demand for land. Since degree of utility and extent of demand go together, the greater the excess of this utility above that of wheat growing, the more land a given use will take away from the wheat fields. Thus a different and higher marginal utility will be established because of the intense use.

Similarly, the kinds of utility of higher degree are an important factor in demand. If all uses are assumed to be constant and unchanging — as they may be for the purposes of an illustration requiring static conditions of demand — only actual uses of land near the margin need be considered. The influence of uses of higher degree is in a sense a phase of the dynamics of demand. But it is perhaps just in these regions of high utility that new developments are most likely. The leadership of consumption lies with those having much free income who are thus able to experiment with new combinations of goods. Subjective conditions favoring the development of complementary utilities in consumption cause an increased demand for the articles which permit this exploitation and thus tend to increase their economic value. Perhaps a strictly static view would not need to take account of this effect, but in fact the complementary relation is in its very nature flexible, variable, and dynamic. Complementary utility and super-marginal utility are shifting quantities. Their

amount and its fluctuation must affect the amount of demand. Complementary utility therefore indirectly affects value or marginal utility.

It is a defect in the exposition of the marginal-utility theory of value that it fails to notice that the determining effect of the marginal increments of consumption, which are relatively poor in utility, is what it is because the rest of the supply and demand are what they are, and that the demand would not reach the amount assumed without the more fruitful as well as the marginal uses. The more important uses are assumed to be fixed and certain and the marginal to be variable and doubtful, and of course the variable uses are the critical point. Likewise it is the common man's assumption that price is fixed in the large markets, or by large dealers, and merely echoed by the small. In fact, the large transactions are of decisive importance only in proportion to their size, and they indicate the normal price better only because of their greater sensitiveness to changes in supply. Similarly the margin of utility is where it is because of the amount of the entire utility and the volume of the entire demand. Marginal utility is therefore in part determined, though indirectly, by the need for the goods in groups and uses that are certain of their effect just because highly productive of super-marginal utility.

Most of the uses to which important articles of consumption are put, especially the more durable articles, have considerable super-marginal utility. In perhaps the majority of private economies in which such articles are used, a sole, and therefore a marginal, unit will yield a utility much above the merely marginal utility. But the demand for such articles is the most sure of all. At the same time the relation of their utility to value, as degree of market value or marginal utility, is somewhat remote. As regards an article of this nature, such reference to marginal utility as may enter the mind of the consumer will serve chiefly the purpose of aiding him to form a notion of the amount of

super-marginal utility or consumer's rent he is to receive. If there are several units of the same supply definitely needed within a particular private economy, even the last to be obtained may have appreciably more than marginal utility. The surplus or super-marginal utility, which is likely to consist of complementary utility, will be a factor in determining the purchase. If fixity of degree of utility for each use could be granted as a postulate of the theory of diminishing utility and marginal utility, the application of quasi-mathematical conceptions of marginal utility and value would be less obstructed by complementary utility and super-marginal utility, which are admittedly contingent. Actually there is often much leeway, though variable in amount, between marginal enjoyment and reasonably expected enjoyment or utility. So far from being the rule, it is rather an unusual coincidence when the utility of an article to its owner conforms to that of the price paid for it.

Complementary utility is either transputed to a few articles as economic value, or else it is super-marginal. Its tendency in the field of consumption is to avoid transputation. Consumption groupings, too, are varied and elastic, and the possibilities of substitution are correspondingly greater for a missing group member than for an isolated unit of supply. When there is no necessity for transputation, the utility resulting from exploitation of commodities in groups is one of the greatest sources of super-marginal utility or "consumer's rent." Grouping as pursued consciously and in the concrete is mainly a free activity, and the psychical income thus obtained is not subject to a market countercharge. Nor is it usually shunted from the group as a whole to some one or few members. The complementary relation always implies potentiality of transputation, but is more significant for happiness, though less significant for exchange, when transputation is unnecessary and unthought of. Transputation, or rather imputation —

since nobody is interested in indirect goods except as means and without distinction of ultimate uses — is the rule in production, or at any rate the significant situation. The opposite is true in consumption. Here complementary utility not only tends to escape transputation, but is intrinsically of greater significance when it is unimputed, or not directly reflected in market value.[1]

It may be alleged that complementary utility is just as much subject to marginal judgment and valuation as the utility of any congeries of goods, for, though the complement is a member of a group instead of a unit of a homogeneous supply, it may be said that the group is itself a unit of a supply of such groups which will be increased in number up to the marginal point, and then each group will be valued only as the marginal one is valued. This would all be very true for economic value provided the premises of the argument held, and doubtless some persons are not able to separate their judgment of utility from their judgment of value (in the narrower economic sense) without the aid of such circumstances as turn utility into value. But the premises do not hold, and the separation of the judgment of utility from that of economic value is specially facilitated in the case of complementary utility. Where the usual if not the typical situation is that of a consumer needing but one unit of one kind of good, and not a supply in the sense that implies plurality, he may very well find a striking disproportion between the utility of the good to him and the price, or the utility of the price, he pays for it. An amateur musician's piano or a boy's fishing tackle have degrees of utility which their respective prices seldom even faintly express. It is particularly a complement, and the large group to which it belongs,

[1] Professor Patten, though without reference in this connection to complementary utility, emphasizes the importance of keeping a large part of utility super-marginal through competitive substitution of one good for another in consumption to take advantage of differences in price. See *Theory of Prosperity*, 1902, especially pp. 61 and 82.

that is likely to be wanted but once. The group will not bear repetition. It often bulks so large that one group is enough for the particular economy. Its utility may be anywhere above the margin. Here marginal utility is not nearly so important as utility, especially complementary utility. Neither household furniture, nor clothing, nor even food when considered in relation to immediate need, are to the consumer a homogeneous supply. Each is a related group of unlike goods. Moreover, each article of a group is for the most part unique in the economy of the individual consumer, and that too by preference. The utility of such a unique good can have any sort of relation to marginal utility, and the difference between marginal and entire utility will be clear. It is a monstrous mistake to suppose that marginal utility is the only utility. Indeed it is often necessary, tacitly or explicitly, to consider the needs of society at large in order to give the homogeneous supply and the marginal principle the chance they deserve to have.

In the case of food and of economically perishable goods, the situation is not quite the same as for durable goods, which may be called the "fixed capital" of consumption. There is a flux and recurrence of processive need which must be met by a flow of goods, and thus the unit that fully meets the need of to-day, so that no second unit is now required, will disappear and make room for a unit of the same sort to-morrow to meet the recurrence of the same need. Every careful student of economics appreciates how unsatisfactorily the ordinary conception of a supply of goods — that is, a given number or a number varying with the price per unit — works out in connection with such utilities in illustrating diminishing utility and marginal utility. But we can apply the conception of diminution of utility to the volume of a flow as well as to the amount of a fund. A supply of one a day, whether units can be held over from previous days or not, would, supposing the need

is also for one a day, afford only the unique good whose utility may be expected to be greater than marginal.

Some utilities do not merely tend to escape imputation and transputation; they are unimputable. Nobody can confine and market a beautiful natural environment, a blue sky, or a view of sea or mountain, The value of forest-clad hills as a regulator of drainage and climatic conditions cannot be imputed to this or that tree or wood-lot and be bought or sold with it. Such things will not bear dissection and sale piecemeal. They are none the less economically, though not commercially, valuable. They are valuable to the community, though they are nobody's individual asset. They contribute to the value of land, but their contribution cannot be separately appropriated or individually administered. Perhaps commercial honesty and the cleanliness and orderliness of a people are values in the same category, but they are not so clearly economic goods as is the forest.

It is perhaps because of the generally free and unimputed character of group utility in consumption that it has received little or no attention from economists.[1] Unless necessaries are encroached upon, consumption may largely avoid imputation, which makes economic value out of complementary utility, and transputation, which involves this and also the disproportionate distribution of both the complementary utility and the corresponding value. Though merely complementary utility and transputed utility are cognate conceptions, their phenomena being results of the same general situation, one is the bright side and the other the darker side of consumption. It is too often forgotten that economic value itself is, from the social point of view, not a thing to be desired, but it is rather a measure of the power of environment over man. Perhaps for the individual also the possession of things having much eco-

[1] With the conspicuous exception of Professor Patten, *Consumption of Wealth* (1889), and *Theory of Dynamic Economics* (1892).

nomic value is a measure of his power over his fellows. When both terms of this relation are duly considered, the sum is seen to be zero. Transputed utility is like all value in being a measure of the power of circumstances and of commercial strategy. Utility, on the other hand, is directly worthy of desire, and complementary utility is the species of utility the least likely to be subjected to a deduction for costs, and therefore the most largely net. In other words, it is the most likely to be super-marginal.

CHAPTER XIII

THE NATURE OF ADVENTITIOUS UTILITY

ADVENTITIOUS utility has been defined as that part of the utility of a good which is attributed to it on account of the distinction that its consumption or enjoyment is felt to confer on the possessor or consumer by comparison with others apparently or constructively not equally well able to pay.

In discussing adventitious utility we are obviously dealing with something very closely related to luxury. Both are phenomena of large expenditure or of unusual ability to pay, and so of large income. The man with little to spend devotes most of it to articles having utility proper or those having necessarily transputed utility. Whether luxury is morally justifiable or not we cannot say, because we do not know what is meant by luxury, and perhaps could not arrive at an acceptable definition if we tried. By some it is said to refer to whatever is relatively expensive as compared with what habit and custom have made familiar to the person employing the term or applying the epithet.[1] Others distinguish some more specific element.

We shall not attempt to discuss the relation between adventitious utility and luxury. Perhaps luxury is merely the refinement of consumption. Perhaps it is indulgence

[1] The relativity theory is best represented by Roscher, *Grundlagen der Nationalökonomie*, book v, chap. II, 23d ed., p. 662. He emphasizes stage of civilization and degree of complexity of life as controlling the idea. By way of illustration he quotes an English writer of the sixteenth century who complained that men were building their houses of oak in place of willow; while formerly houses were of willow but the men were of oak. The full development of Roscher's view is contained in his essay, "Ueber den Luxus," in *Ansichten der Volkswirtschaft aus dem geschichtlichen Standpunkte*, 3. Aufl., 1878.

in the gratifications of adventitious utility. As actually used, the word more likely means both, and besides refers to various other aspects of expenditure. This confusion is readily explained. From the consumption or enjoyment of rare and costly articles strictly on account of their utility proper as developed by the refinement of consumption, it is all too easy to pass to the consumption or enjoyment of the very same articles merely or chiefly because of their costliness, and because of the impression upon others made by their possession and use. Transference of feeling in the individual and imitation of externals in society at large are continually bridging this gap and obscuring the dividing line.

Adventitious utility is a product of social relations and of feelings of invidiousness and emulation. It is not the result of the intrinsic qualities of a good. Nor is it directly the result of the conditions of supply, though it has for its basis rarity and correspondingly high marginal utility. Adventitious utility is not, like utility proper, limited in amount by the intrinsic qualities of the good. Transputation, moreover, does not account for the accession of utility received by an object that has become a means of distinction and of ostentation, although adventitious utility, like transputed utility, is superposed upon utility proper. Adventitious utility is a species by itself. But like transputed utility, it is always marginal, never super-marginal. This follows from the fact that it is a result of economic value or price.

Since the adventitious utilities are not present in the super-marginal utilities of the different units, thus requiring only decreased supply to reveal their amount, there is no form of curve appropriate to adventitious utility which may be discovered by changes in price. Adventitious utility is itself first created in due time as a result of increased or high price. The higher degree of marginal utility proper, unlike a similar degree of adventitious utility, is the

utility, previously in part super-marginal, of a unit put to a higher order of use than that formerly at the margin. The higher marginal utility is newly revealed to the market by the conditions of supply, but the utility itself, so far as it is utility proper, is in no sense so created. But in the case of adventitious utility, its very existence is dependent upon price or, strictly speaking, upon high price. A free good, or an abundant good, cannot possess it.

The consumption or enjoyment of adventitious utility need not consciously be accompanied by social reference. The distinction valued may be transferred from social relations to the qualities of the object and the utility be thought of as inhering in it. It is with reference to the socio-psychical origin and development of this utility that the criterion of its adventitiousness is to be applied. The individual thinks he values for itself the thing possessing adventitious utility, but he really values such an article as highly as he does only because of insidious associations and suggestions. Thus, although the consumption of articles for the sake of adventitious utility is objectively and socially uneconomical and even immoral, it is not subjectively so, and it justifies no inference as to the morality of the individual. Either by transference of feeling within the consumer, or because of incomplete subjective imitation of its originator, adventitious utility becomes psychically an immediate utility. But it is only superficially so and is destroyed by analysis.

Adventitious utility is a product of a sort of psychical parasitism. The fundamental processes of its evolution are affective suggestion and transference of feeling. In general, of course, transference of feeling is adaptive in character and of survival value. But the principle is also operative when the results are at best indifferent, which is the case with adventitious utility. It is its character as a by-product which makes appropriate the name "adventitious." The small feet of Chinese women are such an

adventitious by-product of civilization. Dress and personal decoration have been thoroughly permeated with the same element from the beginnings of tatooing down.

In the value of the diamond is to be seen perhaps the best example of adventitious utility. The profitableness of the policy of the great diamond monopoly in strictly limiting output is a result of the ordinary effect upon prices, not of mere limitation of supply, but of adventitious utility maintained by this policy. The great increase in the supply of diamonds since the opening of the South African mines has been accompanied by a marked increase in their value. The expectation of a decline in their price was disappointed only because of the fact that their utility is so largely adventitious. Even so the marked increase in supply accompanied by an equally marked increase in economic value has been possible only because of a general increase of free income, especially in America, which absorbs most of the world's production. The intelligence or the good sense of the people with increasing free income has not increased in proportion to their income, although this proposition needs to be qualified somewhat with reference to the serviceableness of the diamond as a consumption reserve. Even so there are much more economical modes of keeping such a reserve.

The love of distinction is the subjective counterpart and basis of adventitious utility. The love of distinction may be a purely closet emotion. The judgment of one's self may be sufficient. But it is more likely that self-esteem will try to find support in the esteem of others. Even the sense of honor, though it may be desocialized, is usually a very social sentiment. *A fortiori* the feeling of economic distinction will usually express itself outwardly and socially, and its means of expression will be more or less grossly material. Particularly where wealth is the main road to distinction, adventitious utility flourishes. It becomes sheer expense for expense's sake.

The quantitative judgments of the human mind are essentially relative and comparative. Weber's Law is a phase of this fundamental fact. Only through the adoption of physical means of measurement do quantitative judgments come to have the appearance of absoluteness. Hence a man is naturally inclined to estimate his own worth by comparison with others. Much depends upon the character of the individual whether this procedure is used more as an excuse for defects or as a spur to ambition. But even the most rational and philosophically minded person never quite frees himself from this sort of thing and thus comes to value himself according to intrinsic qualities. Indeed, this tendency of the human mind is not merely a result of general adaptation, but it has a special fitness for the purposes of social organization and the division of labor. No men are perfect nor can they become so, hence all that social economy can do is merely to fit the best available man into the most appropriate place. That which is necessarily imperfect, or good only in one or few ways, as is usually the case with human nature in the concrete, must be judged relatively. Whether a man is good for much or "good for nothing" depends upon what kind of man is needed for some specific purpose and upon the facility of supplying the demand. The practical importance of the man will have little to do with his excellences or defects of temperament and disposition as measured by general and absolute standards. The man himself will disregard the qualification and attribute enhanced importance to his own positive qualities. The practical judgment of magnitude is relative. Thus adventitious utility has its foundations deep down in human nature.

CHAPTER XIV

SOCIAL PHASES AND THE ECONOMIC STATUS OF ADVENTITIOUS UTILITY

In viewing briefly the phases of adventitious utility we shall touch upon certain socio-psychical phenomena involving principles of general bearing. We need to use the principles that would constitute the developed science of social psychology. But we must perforce be content with rather vague foreshadowings of such principles.

The phase of the evolution of adventitious utility that first deserves attention is the class-standard in consumption.[1] This is in part a result of custom and imitation. Passively to ride walking distances in a vehicle reserved for one's exclusive use is perhaps historically the most constant mark of "class." The nobleman has always been separated from the commoner by habits of dress and living, and has usually felt called upon to practice a "noble extravagance." Customary distinctions between the classes in matters of consumption have, under cruder social conditions, frequently been enacted into laws. Inequality in

[1] In the chapters on adventitious utility the writer is greatly indebted to Thorstein Veblen's brilliant contribution to sociology as well as to economics, *The Theory of the Leisure Class*, which develops the theory of adventitious utility in a different way and under other names. Phases of the same thought are more than hinted at by the founder of political economy, clearly formulated by John Rae (*New Principles of Political Economy*, 1834, book II, chap. XI), and forcibly, though cursorily, stated by Senior (*Political Economy*, 1850, p. 12). Indeed, they appear as elements in most theories of luxury. Among such studies of importance may be mentioned: Baudrillart, *Histoire du luxe privé et publique depuis l'antiquité jusqu' à nos jours*, 1878–80, and Laveleye, *Le luxe*, 1887. The contribution, if it may be so dignified, of the present essay at this point is the restatement of these ideas in their connection with fundamental doctrines concerning utility and its variation.

the distribution of income is very clearly the foundation for the sort of adventitious utility that depends upon a class-standard. An article that is known to be consumed habitually by a higher class, and by its members chiefly, has by reason of this fact a supervening utility in addition to that due to its intrinsic qualities. Purple in the ancient world was a badge of superiority specially fitted for this purpose by reason of the conspicuousness of the color and the high cost of the dye. But the splendor of the Tyrian "purple" could not survive the cheapness of red dyes. There have been times in the history of civilization when drunkenness was the privilege and evidence of superior social standing, whence the descriptive phrase, "drunk as a lord." Class aspirations have of course their good as well as their bad side — their good side especially in the patronage of literature, science, and the fine arts. But in practice, for most of the members of the upper classes, the side most in evidence has always been adventitious, and thus only by accident partly of good effect.

Since means have increased and the outlook of the lower classes has been so much enlarged by education, the lines between classes are no longer so definite as formerly. But industrial progress and the spread of democratic ideas have only made more intense the struggle to preserve marks of social distinction already attained, or to gain higher ones. "Keeping up appearances" is the controlling factor in the consumption of the families that would in England be called "middle class." This is obviously a phase of adventitious utility. Inordinately high expenditure for external clothing and house rent, compelling sacrifices of utility proper, is common among all classes with limited incomes. The vogue of the brief summer vacation at the seashore or in the mountains and of travel in general, especially foreign travel, is to a considerable extent due to adventitious utility, although here, as always, adventitious utility has a more solid foundation of real value. The extent of the

demand for automobiles is now plainly much in excess of any utility proper which they afford.

Adventitious utility is not only the basis of the imitative class standard in consumption, but it is also the great factor in the breaking down of external class distinctions when economic conditions make this possible. The dominance of the political theories of the Revolutionary Era and, still more important, the spread of well-being and the enlarged influence of the middle class resulting from the Industrial Revolution brought about the cheapening and discarding of fixed marks of class. With the loss of fixity in such distinctions came the dominance of fashion-imitation instead of custom-imitation, to use the phrase of Gabriel Tarde. The lower classes are now able to imitate their "betters," and do. This is in part the cause of the tendency toward unsubstantiality and tinsel in the consumption of the poorer classes. Continual change in modes of dress is now necessary in order that the upper class be enabled to possess marks of distinction that those below them in the social scale have not yet imitated. Fashion is thus a moderate but typical form of ostentation. Prompt imitation compels rapid changes in the garments of "society."

The characteristic quality of fashion appears to be quickness of change. But in fact fashion is essentially conformism rather than caprice. It is a good example of one type of socio-psychic process, that is, leadership depending, not on initiative or originality, but on a delicate sensibility to the inarticulate wants of the majority. The street-tough gets his cue from the gang and is followed by them because he gives definite expression to their cravings and impulses. Our successful politician of the lower order is of the same type. Likewise, the leader of fashion is no more ruler than ruled. He (or she) is keener to see the trend, or economically more able than others to push things a little farther in the direction in which the mass is moving, or if

the time is ripe, he will begin the reaction at just the "psychological moment." That the leaders of fashion are themselves in turn the tools of tailors and dressmakers fits well into the general scheme.

Dress is the great realm of fashion chiefly because it affords the best opportunity for indulgence in adventitious utility on a small scale. It is not true that changing fashions in dress are due to the desire for change for the sake of change. Gregariousness in wants is the foundation of fashion and of itself it would not produce rapid change. The impulse to change comes from another source, that is, from adventitious utility. Style of dress is an easy and fit means of distinction and ostentation, but it may be quickly imitated, hence resort must be had to rapid change. On analyzing stylishness we find the suggestion of newness an important element. But the new style must have only the semblance of originality. The suggestion of expense also is rather more important than newness for the agreeable effect of the "latest style." Newness itself is scarcely more than a phase of the suggestion of expensiveness. It costs a great deal to dress always in the newest mode. It is evident that the utility of both these elements of fashionableness is chiefly adventitious.[1]

Running through all adventitious practices is the subornation of others to serve the exaltation of the ego. In primitive times there was scarcely any other way to spend one's surplus than to feed hordes of retainers and lackeys. Nowadays the number of those that minister to the personal wants of individuals is less noticeable, partly because there are so many ways of spending one's surplus on goods, partly because such services have to a large extent become institutional and available to all comers. It is probable that the number of persons employed directly in the service of

[1] Cf. Locke, *Lowering of Interest*, 1692, pp. 93-94: "Things of fashion will be had . . . whatever rates they cost, and the rather because they are dear."

individuals has been declining of late relatively to the total population. But the proportion of persons so employed institutionally has doubtless greatly increased. As to the morality of such demands, they should be viewed in the light of the Kantian imperative, — so act as to treat humanity in every case as an end, never as means only.[1] But so long as human nature remains what it is, some men, if they have the pecuniary wherewithal, will seek to make others mere means to their ends.

As regards the moral quality of indulgence in adventitious utility generally, it is certainly bad. There is much similarity between cruelty and ostentation, both depending for the enjoyment they yield on the opposite effect upon others, thus being anti-social, and objectively, if not subjectively, malicious. The important qualification of this proposition is that envy of indulgence in adventitious utility, however general and however much a source of unhappiness, is irrational and itself a weakness or defect. Although consumption for the sake of adventitious utility is thus objectively immoral, there is not any subjective wrongdoing or bad intention implied, owing to the thoroughly conventional and social character of such utility and to the resulting transference of feeling which makes it pass for a quality of goods.

The element of adventitious utility is to be condemned also from a socio-economic point of view, if this can be distinguished from the ethical. It is a parasitic aftergrowth that should be pruned away from economic practice. Proper, particular, complementary, and transputed utilities are positively important, not merely in the individual, but also in the social economy. Adventitious utility, on the other hand, cancels out in the social summation of welfare; that is, the enjoyment of it by one member of society is accompanied by actual or presumptive subtraction from the enjoyment of others. The enjoy-

[1] Kant's *Theory of Ethics* (Abbot's translation), 6th ed., 1909, p. 47.

ment of the one is on the whole proportional to the disagreeable feelings of envy and humiliation excited in others. From the social point of view there is no real need corresponding to adventitious utility and no benefit from it.

Ostentation, and all forms of adventitious utility, however, are still chiefly a private concern, or rather they are not proper subjects of regulation by law or of drastic condemnation by public opinion. They are of the nature of personal vice as much as of social immorality. They cannot be directly dealt with by society to advantage and they are likely to bring on themselves their appropriate punishment. The "vanity of life" is often only the vanity of adventitious enjoyment and of merely relative ambitions.

The foregoing leads us up to the conception of value without utility, though utility is the foundation of value. The clue to the solution of the paradox lies in the fact that adventitious utility, which, from a social point of view, is not real utility, but only such in opinion, may serve as a basis for value. Value is, therefore, not necessarily in proportion to utility proper, and may exist without involving any considerable element of it. There is a reason for the difficulty the older economists sometimes found in this so utterly contradictory relation between utility and value. From the social point of view, value is not in proportion to rationally attributed utility, even when we qualify utility as marginal. Adam Smith should be interpreted as meaning that the diamond has little utility proper when he says that it has great value but little or no utility.[1] Adventi-

[1] *Wealth of Nations*, book I, chap. IV, p. 30, of Cannan's edition: "A diamond has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it." Böhm-Bawerk criticizes this point of view on p. 153 of the *Positive Theory of Capital* (translation), in terms that remind one of the above passage, though he does not mention Smith in this connection. Smart, in his *Introduction to the Theory of Value*, p. 33, doubtless following Böhm-Bawerk, is even more explicit as to the explanatory sufficiency of the marginal utility due to the small quantity of diamonds available. Böhm-Bawerk's criticism seems to be an echo of J. S. Mill, *Principles of Political Economy*, book III,

tious utility is not utility, but expense masquerading as utility. It is valuation and mere economic value, without utility. Not all wealth, as commercially gauged, contributes to welfare.

There is a tendency on the part of merchants to accommodate customers who wish to pay high prices merely for the sake of demonstrating their ability to pay. The perfect working of such a system, however, presupposes enough absence of competition to make possible the differentiation of charges. A fashionable location greatly helps. But the merchant may wish to get the trade both of those who want their money's worth and of those who want to prove that they do not have to consider whether they get their money's worth or not. The device of low-price sales will sometimes accomplish this purpose. The ignorance and pride of buyers may be an efficient barrier between different classes of customers, and only less secure than monopoly. But in order that such mercantile devices may work well, the social distinction due to price paid must be clearly evidenced, for example, by the name and location of the "shop." There must also usually be the semblance of enhanced utility accompanying the higher price.

The relation of adventitious utility or luxury to taxa-

chap. I, sec. 2, who refers to De Quincey. To none of these writers does it occur that what functions as utility may be supposititious.

In the *Lectures of Adam Smith*, pp. 176–78, we find the factors determining price discussed in a way similarly suggestive. He enumerates three, the first being demand or need. The second is abundance or scarcity in proportion to need. This is illustrated by the dearness of diamonds, but that, he says, is due more to the third factor, which is the riches or poverty of those who demand an article. "When there is not enough produced to serve everybody, the fortune of the bidders is the only regulation of the price." This third factor does not appear in the corresponding passage of the *Wealth of Nations*. But he does say (book I, chap. XI, part III, p. 224): "In times of wealth and luxury what is rare with only nearly equal merit is always preferred to what is common." An especially pointed remark is quoted below on p. 184. Adam Smith barely missed presenting a developed theory of adventitious utility.

tion is significant. A tax on an article of luxury may not decrease the demand but may even have a contrary effect. The higher the price paid the more decisive is the evidence of ability to pay and of riches. It was Rae's view [1] that, since the consumption of articles of luxury is favored by increase of cost, a tax on luxuries might be used to obtain public revenue without sacrifice to the consumer. If man will incur expense for the sake of expense, it is well that the state should profit by the tendency, rather than that it should result merely in waste of labor. There is certainly no better evidence of "ability to pay" than the desire to pay merely for the sake of paying.

All of nature's wastes, and not merely those in the field of biology, are likely to contain germs of future adaptation. Adventitious utility is one of the most conspicuous phases, if not the most conspicuous, of the waste of surplus socio-psychic energy and of pecuniary means. Hence we should expect the prodigality and the wastes of adventitious utility to contribute something to progress. The study of social evolution affords convincing examples. The striving for display that expressed itself in decorating the person furnished the foundation for the evolution of clothing. Æsthetic developments have been especially dependent upon originally extraneous suggestions, the mere oddity of unusually fine and curiously colored textures and designs first attracting attention. Scarcely any decorative motive is without its historic symbolism. Prominent among others are the symbols of rank and riches, which are impressive because of their adventitious nature. Many useful commodities, soap and cotton cloth among others, first gained recognition as expensive foreign rarities. The high price of luxuries, besides, operates as a stimulus to invention. All these things may be said in extenuation of adventitious utility. But they fall short of justifying it.

Waste is a question of the proportion of results to means

[1] *New Principles of Political Economy*, book III, chap. II.

and a matter of quantitative relations, as is the variation of utility. But it is obvious that the greatest significance of adventitious utility is not in relation to the variation of utility, in the sense which makes that the genus of which diminishing utility is a species. The character of the variation of such utility is, however, sufficiently worthy of remark, though its protean nature makes any account of it seem unduly formal and abstract.

It is sufficient here to consider the phenomena of social variation only, and first from the point of view of commercial demand. Adventitious utility thus viewed is always equal to value and is capable of any degree of expansion. It varies as a people's power to spend. There will come a stage when a greater quantity, not only of food, but also of most other goods, cannot to advantage be used, though changes in quality may still be valued. The appetite for adventitious utility, on the contrary, is quantitatively insatiable. The increase of the amount of adventitious utility is limited only by the increase of riches, that is, of large private fortunes. But adventitious utility will attach itself to different objects as man's powers of production increase.

From the point of view of the sum of the individuals who compose society and as measured subjectively, on the other hand, the net amount of adventitious utility is and remains at zero or thereabouts. The gain of one is the loss of others.

CHAPTER XV

HOSTS AND MASKS OF ADVENTITIOUS UTILITY

ADVENTITIOUS utility has been called parasitic. Parasitism is both a biological and a social phenomenon. The correlate of the parasite in biology is the "host," the term being borrowed from social relations. In bringing back this term to the field of social science we give it a connotation analogous to that which it has in biology, and therefore somewhat unusual. But the biological conception is of so much value for social science that this unusual sense of the word is not effective as an objection.

The parasite's host, at least in the case of so intelligent an animal as man, must be deceived as to the real nature of the relation existing between him and the parasite. Hence the parasite must disguise itself and appear to be something different from what it is. It is a permissible personification to say that adventitious utility assumes masks. There is, of course, no hypocrisy involved, and those who actively foster adventitious utility are more deceived than anybody else. But adventitious utility must appear to be real utility to get its hold upon the consumer. Its masks are numerous and serve their purpose well.

Adventitious utility is especially likely to cloak itself in the guise of æsthetic enjoyment. A good criterion for discrimination is how far substance is sacrificed to externals and how far form is determined by cost. Where the costliness is in the material, great expensiveness is achieved with little ingenuity. Costliness from expenditure of labor has the advantage of requiring greater cleverness, but the rare material is usually more impressive for the mass of observers. Art is either not yet evolved or it has decayed

when the material surpasses the workmanship. But excessive ornamentation also is a phase of decadence and of adventitious utility. The evidence and the symbols of costliness are the great pitfall of the fine arts. It is not to be absolutely denied, however, that mere costliness may be a legitimate factor in the impression achieved, though its place must be a small one.

Adventitious utility can the more easily pass for æsthetic because the complementary relation plays so large a part in art. An effect may be complementary in a group of effects which is adventitious, and thus its nature is less directly observable. The analysis that reveals the complementary element is likely to stop there. Just so Hindu mythology finds support for the earth on the back of an elephant, and then — a thought which probably occurred several centuries later — for the elephant on the back of a tortoise.

The supplying of complements involves a possibly disproportionate increase of utility. But a complement can produce such an effect only initially and not while being made common and dominant in its group. The complementary value of rarity in time — if rarity is needed for "a change" — is similarly limited. If a very rare article is made common in a private economy, this must be ultimately on grounds of expense and ostentation, since an article common enough to be used independently and to dominate quantitatively in various groups can have in some of its uses only particular utility based on the strength of its intrinsic qualities. Only adventitious utility can provide the semblance of warrant for the disproportionate expense. The naturally complementary character of the use of the rare makes its dominating use, even where the burden can be borne, an æsthetic monstrosity. If a merely imposing effect is sought, it may be attained by such means, but even that will not often bear analysis. A building of polished marble is scarcely justifiable, æsthetically or eco-

nomically, except as the center of a group not marble; but the buildings constituting a "civic center," and thus in effect complementary to the other buildings of a city, may likewise be of marble. Such distinction is not appropriate for a private house, but only for a public building. Comfort and elegance are permissible for a private citizen if he can afford them, magnificence never. The use of marble to trim a residence, however, may be complementary and suitable, supposing it to be in harmony with the other material.

Much æsthetic development is yet needed in order that people may see the meaning and limitations of the complementary use of the rare. Judgment as to what is due to intrinsic qualities and what to rarity is often difficult on account of rarity being so often supported by real excellence. This is conspicuously the case with the precious metals and precious stones, which possess great natural beauty and durability. But the limit which should be fixed by their utility proper, or by the utility proper of the groups in which they are used, is often greatly surpassed. The rare is often esteemed the one good thing fully worthy of confident use. Aside from the narrow-mindedness of such a course, — narrowness being admittedly often enough of practical advantage, — this policy means foregoing the attempt adequately to utilize goods.

The emphasis on genuineness as against show is not properly an emphasis on rarity. As an emphasis on intrinsic qualities, it should lead directly away from adventitious utility. Show and semblance are imitations of the rare intended to appropriate to themselves its distinction. The motive is, of course, the desire to obtain adventitious utility, but the effect is only a weakened reflection of the same quality of the imitated rare. The spread of imitations, due to mistaken ambitions of the many, has introduced, by way of contrast, a psychical element which does not properly belong to the consumption of the rare and costly.

Genuineness should not be thought of, nor sought for, principally in this region. "Real" lace ought to be distinguished by intrinsic qualities instead of by the fact of its having been painstakingly made by hand.

The refusal to accept economic substitutes, also, is not as such an emphasis on genuineness, though it usually parades under that name. Substitution limits enhancement of value. Substitutes for articles both of transputed and of adventitious utility should be adopted in so far as it is possible to do so without undue sacrifice of utility proper or of complementary utility. A substitute is very different from an imitation. The former offers essential qualities; the latter, external appearances. It is bad economy, unless there is no choice, to buy an article whose price is bid up by reason of adventitious considerations. It is only in the expenditure of the rich that we should expect little substitution, and there chiefly because even a very great saving of money will not compensate for the effort and thought required for careful expenditure. Among such, too, the doubt should arise as to whether it is entirely right, morally and æsthetically, to sanction the use of what will not ordinarily be used without abuse.

The "best quality" is not necessarily the rare. It is the quality which best accomplishes the purposes of the good. In so far as the difference between the best and the less good is due to quantity of elaboration rather than to the work of nature, and in so far also as the labor can be had easily in increasing amount, the best certainly is not the rare, for if so, then the best is merely what costs most. The due proportion is not the superlative. The best quality of cloth is not always of the finest texture. The coarse article not only has its place, but may be best for some purposes. Sail cloth for mercantile use would not be improved by great fineness of fiber and weave. The appetite for rarity and expense may also find recondite forms of skill as well as expensive material. Such demand is too

often not for intrinsic excellence and genuineness, but for adventitious utility. The difference between the rare and the best should be clear if strict attention is paid to intended uses.

The indiscriminate pursuit of the "best quality" means, not only a failure to adapt the qualities or grades of articles to their uses in a way to make the most of their total utility, but also frequently a misapplication of articles which deprives them of their due effectiveness. The refinement of consumption consists, in giving each kind and quality its place, not in finding room only for the rare and the fine. But the former alternative makes greater demands on the consumer's intelligence. Round steak is more nourishing than the tenderer and more tasty cuts, and it is only poor economy, that is, failure to make the most of the division of use, that does not give it more of a place in the cuisine of the well-to-do, though that would not be accomplished by serving it broiled rare.

Natural differences should be made the most of. The intentional manufacture of inferior grades or qualities, merely for absolute cheapness and without regard to economy, is a very different matter. The merely coarse may be more durable. But the shoddy clothing that will not last — perhaps even this material has its proper place in horse-blankets — finds a market only because of ignorance, or because of adventitious motives that prefer sham to substance, or because of a hand-to-mouth poverty that makes it impossible to economize and to provide adequately for the future through using more durable goods.

If, as is conceivable, the best of a class of goods is so very versatile as to be the best adapted for all the uses of the class, then the situation should be dealt with according to the principles governing the economic application of the rare, that is, its use should be husbanded for extraordinary occasions and unusual complementary effects.

Differences of "quality" (fineness) are differences of de-

gree rather than differences of kind. Rarity of "quality" is not worthy of as much esteem as the more individual rarity of kind. But if adventitious effects are what is sought, the short and easy method for the invidiously ambitious is to surpass competitors on their own ground. Adventitious utility here, as in the case of fashionableness, favors but a modicum of individuality. It keeps too close to the throng to give its wasteful vagaries even their due value as experiments. The "best," in the sense of the rare quality, has an exaggerated and unjustifiable importance in current ideas about consumption. The finer and flimsier weaves of silk and cotton, — the latter, however, not sold under that name, — the "sheer" and the "delicate" fabrics, used especially for feminine apparel, owe their prominence partly to fashion, but more fundamentally to poverty of thought. Those for whom, in their own opinion, "the best is none too good" are lacking in perspicuity with reference, not merely to their own qualities, but also to the nature of their surroundings.

The connotation of elegance, which luxury, as the consumption of the rare, has acquired, is no more essential to it than is the connotation of refinement. Both are due to suggestions of expense and of the results expense may be expected to produce. Such association of ideas is quite extrinsic. Evident lavishness in the use of money, as well as of goods, is the opposite of elegant.

No kind of thing that presupposes much expense or much leisure remains without the taint of adventitiousness. The most trivial and the most important matters are alike made to serve this interest. What is "good form" and good manners is very largely determined by such considerations. So-called "culture," as well as manners, may become chiefly a mark of leisure. So-called "literature," that is, polite letters, loses its relation to life and is to be differentiated as that portion of things written and printed which can be put to no practical use, or has demonstrable

value only on account of its immediate appeal to such emotions as do not impel to action, that is, the sensibilities and sentiments. The literature of the sciences according to this point of view — which it should be said is more often approximated or implied than definitely accepted or expressed — is no longer "literature," nor does familiar acquaintance with it afford "culture." Philosophy is not "literature." History is not "literature." Only poetry and fiction are entitled to the name. The fine arts show analogous tendencies. Most art is aristocratic, too much the satellite and parasite of the leisure class. Use and beauty are divorced. Much labor in the making and an adventitious manual dexterity is considered more important than the skill of eye and mind that avails itself of the accuracy and speed of machines. The man of "cultivated tastes" must be removed from realities and unfit for work. Literature, culture, and the fine arts — thus made to have an antithetical relation to physical environment and to social needs — become creatures of fad and fashion. Of course there are others for whom these words have a very different meaning. Indeed it is essential to the nature of adventitious utility that it have a foundation in real values.

So it is that adventitious utility is mixed with other elements in accordance with its parasitic nature. The motives of human choice and action are in general mixed, but nowhere more so than in certain complex phases of consumption. Adventitious utility is difficult to observe clear of entanglement with real utility, and is in fact entirely separable only by abstraction. Though a dish be favored chiefly because it is expensive and known to be so, it is likely to have also real excellences. But perhaps the case most thoroughly mixed in the entire field of consumption is that of tobacco-smoking. Learning to smoke does not result from direct and immediate enjoyment of the process. The boy, in college or before, feels that it makes him a man to smoke. The habit probably never loses some such

adventitious appeal. It suggests leisure, and may be made evidence of considerable expenditure. It is often merely a pretentious kind of idleness. The habit is also to some degree an aid to sociability. The smell of smoke is intrinsically pleasant to some people and one can learn to appreciate the taste. It has been suggested also that the sucking movements involved are primitively and instinctively pleasant. This is doubtless a vague reminiscence of the time when such a use of the lips was of vital importance. Finally, when the habit is established, there may be a real dependence on the properties of the weed. Smoking may become the most valued of personal indulgences. The utility of smoking is thus highly conglomerate. Wherever adventitious utility enters into consideration, it is almost sure to be but one element in a complex situation. This fact renders all the greater the need of taking thought about such matters. That articles of adventitious utility always have other sorts of utility increases the danger of harboring this pest.

We need a preacher of the immorality of the superlative, or at least of that sort of superlative which is valued for its exclusiveness. Striving for such a "best" is the commonest cause of failure to "hold fast that which is good." So much of good in human achievement is motived by ambition and related feelings, and we are so accustomed to looking for the effects of ambition, both good and evil, only in things of heroic dimensions, that the evil influence of such feelings upon the daily practices of most of us escapes notice. To insist upon the use of the superlative in mere means, and in any merely material thing, is to turn away from the good. Ends and aims should be the highest and the best. But material means — in other words economic goods — should be whatever serves the purpose efficiently at small cost. Searching out and competing for the "best," as conventionally understood, constitutes one of the most serious of economic wastes, and therefore a grave moral wrong.

CHAPTER XVI

MULTIPLE UTILITY

A GOOD or service collectively enjoyed has the character of utility simultaneously in relation to two or more consumers. The appropriate name for this capacity is multiple utility. Such institutions as the theater, the museum, the public park, and the public library possess multiple utility. Most means of instruction and amusement either have or are capable of having this character. Professional services of this nature can be economically used only through such collective enjoyment.

"Public service" is a phrase much heard in these days. It should mean service rendered to the public generally, whether in a governmental or private capacity, thus having in greater or less degree the character of multiple utility. Such services are often personal in the sense of having for their object the person or persons who constitute the public. The possibilities of expansion of this sort of work are parallel in extent and importance with those of the material forms of multiple utility. The supply of those who are competent to undertake such service is steadily increasing. That, however, is as much the result of the increasing wealth of society, and especially of certain classes, as it is of increasing humanitarian interest. But the writer is here concerned rather with such multiple utility as is embodied in material goods.

The material goods especially susceptible of multiple use are those possessing predominantly existential utility. Indeed existential and multiple utility have much in common. The former relates to plural use in the time dimension; the latter is plural contemporaneously or socially, that is, in a

sense, spatially. The possibility of thus realizing much utility at relatively small cost holds for both. Temporal plurality of use, moreover, is a condition specially favorable to the social multiplication of use. Though not, like multiple utility, by nature and definition social, existential utility may be the more easily socialized by reason of its existential character. But services also, though processive, may have multiple utility. The utility of a dramatic performance is usually such.

It would perhaps be logical to make a distinction between socialized existential utility and strictly multiple utility. A book in a public library cannot well be used by more than one person at once. But in economic and social character the uses made of it are not essentially different from the use made of a painting in a public art gallery. Moreover, the housing of both book and picture is of multiple utility. If books could not be used by many in succession without appreciable loss, the situation would be different. Strictly multiple utility is the highest type of the utilities corresponding to a group of modes of utilization which possess in varying degree the same social or collective character. To use the term to represent the entire group seems scarcely avoidable.

The inducement to socialization of enjoyment is the increase of its amount thereby effected. The cost of goods to a circle of consumers constrains to the socialization of enjoyment, in so far as the nature of the utility permits. In strictly multiple utility there is no appreciable diminution of enjoyment for one person by the simultaneous enjoyment of the same object on the part of others. The enjoyment is as often increased for the individual by reason of its sociality or group character as it is diminished by the breaking over of individual exclusiveness. Unless physical conditions require exclusiveness of use, the utility due to this condition is in fact as much apparent as real, for the exclusiveness is often not the means of enjoyment but

its adventitious end. So far as it is adventitious it should of course have no weight with the economist.

In practice the tendency to socialization of utility usually depends upon the ability and inclination of a larger circle to contribute to meeting the expenses. The process of socialization, therefore, is conditioned by and dependent upon a considerable degree of equality of means and also of tastes. In the case of utilities publicly maintained and free, the former condition is removed and the latter made the more important as alone limiting the extent of multiple enjoyment.

Public property has developed largely with reference to the supplying of multiple utilities. The police function itself might be so viewed; and certainly in the performance of its cultural functions, the state acts with direct and almost exclusive reference to such utilities.

A calculation to determine whether a great public work should be undertaken ought not to confine itself to the consideration of merely economic or market values. Utilities below the margin — which in the case of the poor are by no means necessarily small — should have weight. Number, furthermore, may outweigh high degree, and multiple utility means numerous uses. The extent and importance of the benefit, with little reference to ability or inclination to pay for it in the concrete details of its supply, are the things to be considered. This is often overlooked in the debate over questions of public ownership in a way that makes some of the arguments against such a policy ridiculously inept.

It so happens that it is especially multiple utility whose benefits are least adequately estimated in terms of the present and personal. Since the immediate utility of means of communication and transportation is definite and tangible, it would be possible to leave these entirely to the care of private interests. But there are so many indirect benefits to be obtained from good facilities for such purposes

that it is sound public policy for the state to favor the multiplication of their use. Public roads free to all are now taken as a matter of course. Because of the permanent and social character of the enjoyment of objects of art, moreover, heavy expenditure for architecturally fine public buildings is justifiable. The needs of transportation, communication, instruction, recreation, and culture are rightly felt to be proper fields for the extension of collective enterprise in the supply of objects and services of multiple utility.

For the sake of promoting the cultivation of multiple utilities, the state may properly change an economic into a free good. This it is coming generally to do in the case of elementary education. It does not follow that because such utility can thus be obtained without direct pecuniary cost, it is to be had entirely without cost or effort. There is always considerable indirect pecuniary cost, not to mention other costs. The utility of primary education is likely, because "free," to be obtainable only in the more direct proportion to effort. This policy is therefore not at all socialistic. Compulsory attendance at free schools up to the age of thirteen or fifteen years would mean for the majority of parents a very considerable increase in the burden of educating their children.

To consider the educational activity of the state merely from the point of view of direct marginal utility to the individual does it great injustice. By affording through its schools some approach to equality of opportunity, the state intensifies the effectiveness of that competition which is, in the conception of individualistic economics, the chief means to maximum production. Education is therefore not only of direct and immaterial utility, but it is highly productive of wealth, and the more so if it is free. A mistaken economic individualism in such matters is thus met and overcome on its own ground. But it is a poor conception of the duty of society that allows one to assume com-

mercial advantages to constitute the adequate and only justification for the policy. The furnishing of educational opportunities in the broadest sense may well be considered the great positive function of the state.

The dependence of public health upon an unrestrained or even a lavish use of water makes detailed adjustment of charges to costs destructive of collective utility. On account of the large amount of fixed charges involved, also, any such system is likely to be uneconomical. Owing to the contagious character of certain diseases, especially of filth diseases, and to the social importance of sanitation, the use of such an object of collective utility as a public water system cannot well be regulated by separate individual interests and by such principles of atomized marginal utility and commercial value as manifest themselves in the market.

Where the benefits resulting from state activity are more distinctly and tangibly of the nature of pecuniary advantage to the individual, it is possible for the state to charge the user in proportion to use without materially reducing the resulting sum of utility, unless the incidentals of such a system are too vexatious. This is the case with public highways and with transportation facilities generally. The omission of a charge may, also, sometimes be justified on the ground of the indirect cultural benefit of unhampered economic and social interchange of goods and ideas. Market principles are at least very largely modified in all such cases by considerations of public policy. The most notable instance of such modification is the system of charges for the transportation and delivery of mail. The economy of large and unified means of production is not in itself a strong argument for state enterprise in industry. The reasons are usually other than this, and are often sufficiently good to justify the use of the proceeds of taxation to assist an enterprise apparently merely economic in character.

Public works are largely wealth-producing as well as productive of psychical income in the form of immaterial collective utility. The funded and capitalistic nature of expenditures for permanent material constructions, however, gives them a peculiar character. Ought the market rate of interest to limit the amount of expenditure for such a purpose? Despite the fact that the state or society may be conceived to be immortal, and the duration of its needs therefore to be indefinitely long, the current rate of interest ought to determine the proper limit of fixed investment for the sake of obtaining multiple utilities, that is, in so far as abstract durability and solidity of construction are concerned. Since the money for such public works is usually borrowed, the running interest charge makes obvious the need of economy in this particular. But the economic principle would be the same if the means came from revenue. Hence durability must be influenced by the calculated interest charge. But interest-cost is not all that is to be considered.

There is an income of enjoyment to be had from architectural excellence in a public building which may well be set over against a considerable part of the interest. Not only so, but the aspect and reality of solidity and permanence are no inconsiderable element in the architectural effect. For this reason public buildings should be solid as well as comely, more solid and more comely than could be justified, in view of the interest-cost of durability, by figuring according to the principles of private economy. It is appropriate that government buildings designed for permanent use should be monumental. It is direct collective utility, not the immortality of the state, that justifies building for the ages. Such utility of course could not find adequate expression through the purchasing power of the many who enjoy it. The enjoyment of it is mainly incidental or even subconscious, but in it are contained elements of the highest human importance.

Another form of public or national wealth which does not receive adequate care if left to divided and merely individual interest consists of the natural advantages and resources of a country. Especially where the utility in question is unimputable to isolated units of supply, the economical use and due conservation of such sources of production and enjoyment should be an important care of the state. Perhaps the most clear and convincing case is the duty of the state to preserve the natural beauties of its environment. The utility involved is both unimputable and multiple. Partly for similar reasons, partly in the interest of production, the state should care for the preservation of forests.

The prevention of wasteful exploitation and rapid exhaustion of limited and irreplaceable natural resources, such as mines, is also a legitimate public function. But here regard for the future requires hardly more than the application of the principles of discount and interest, especially since the possible developments of invention make somewhat unpredictable just what the material needs of future generations will be. For example, we do not know how long man will care to procure heat and power from coal. There can be no question of preserving mineral resources absolutely. The rate of exhaustion, it is true, should not be more rapid than the regular discounting of the future makes profitable, but this check is already operative through private-economic principles. Perhaps in some countries the state may be more far-sighted than the individual, but this is not as yet true in the United States. The utility of a future supply of minerals is in the main imputable, and the future in such cases may be left mainly to the care of private interest. In general the method of working natural resources, rather than the rate at which they are to be worked out, is the more fit matter for state interference.

The recently awakened interest of the American people

in "conservation" is possibly of greater general than specific importance. There is work to be done to retain for the public the benefit of public lands. But the demand for economical social utilization in place of exploitation for the sake of individual profits contains the germ of a social consciousness that means much more than the preservation of forests and of mineral resources.

In so far as the state or the government can act as vicar or surrogate for the mass of the people in respect of luxurious expenditure, luxury loses its egoistic and invidious character and receives enhanced social importance by acquiring multiple utility. Much public expenditure can be justified where the identical sort of consumption could with difficulty find valid excuse in the case of a private individual. The architecture of public buildings, as already suggested, ought to be imposing and inspiring. Even merely decorative effects are worth paying for. Public "luxury" that is truly entitled to the name lacks the invidious or adventitious element.

Even when the expense appears unjustifiably great in relation to its object, it is less a luxury, in the sense of involving disproportionate expenditure, because of the multiple character of the utility. Public festivals that riot in display are not as wasteful as they seem. But the application of the public money to luxuries should usually be for permanent results and for more or less directly educational purposes. This educational quality is characteristic of expenditures for æsthetic and moral objects, for museums and the theater, and for celebrations and monuments of historically important and still significant events.

Public luxury such as is beyond the reach of the poor otherwise than through public participation may take the place for them of exclusive and expensive, but otherwise analogous, indulgences of the rich. Such an opportunity has for the poor, in effect, quasi-complementary utility. A public art museum is a quasi-complementary good, the

more valuable in proportion to the dinginess of ordinary life. Heavy expenditure for decorative effects in churches and public buildings is often for this reason desirable where good taste would not permit it in a mere private dwelling.

For a semi-public class of citizens, however, such as hereditary nobility or the members of a royal family, or even a permanent high official class, magnificence of private life is sometimes permissible, supposing the public mind is favorably disposed. But in view of the spread and increasing dominance of democratic feeling, this exception is rather of historical interest than of present importance.

It matters not that the luxury of the governing classes and of the state has sprung from personal and egoistic motives without thought of multiple utility. Here, as often, social importance and moral justification for institutions whose origin and history call for a different judgment may come to exist through gradual evolutionary change. The magnificence of a monarch's court may be for the people the adequate symbol of national life and power. The richness of mediæval religious architecture and ritual found response in popular emotion. A state church may be justified on grounds of quasi-complementary utility; but only in relation to a particular people's psychology.

With the advance of democracy and the general increase of comfort, kings, noblemen, and gentlemen are less likely to be faithfully accepted by the people as surrogates in consumption. Public expenditure must become more utilitarian and directly social, instead of merely magnificent and representative. But the merely individualistic interpretation of the state's functions remains economically inadequate, being neither just to the past nor a competent guide for the future. Neither in ethics nor in economics is mere self-development a sufficient formula for human destiny. The utility of civilization itself is multiple.

There are great opportunities for the extension of state

action in the service of multiple utility. These possibilities are being more and more cultivated. But if there is a tendency to socialize certain forms of enjoyment, it is just as true, on the other hand, that the organization of new forms of enjoyment and the further refinement of consumption is to be chiefly the work of individualistic impulses. Hence we need expect no radical disturbance of the balance between social and private utilities, but only, in so far as means permit, a richer development of both.

CHAPTER XVII

THE VARIATION OF UTILITY IN RELATION TO CONSUMER'S RENT, INDIVIDUAL AND SOCIAL

The doctrine of consumer's rent or consumer's surplus is a corollary of the principle of diminishing utility, that is, of the prevailing conception of the variation of utility. The efficiency of the factors of production is measured by the quantity and variety of products, but the efficiency of the social economy cannot be determined short of the effectiveness of the utility realized. Consumer's rent is the kernel of this last matter. The foregoing development of the variation theory should enable us to approach this subject equipped for more positive results than are obtainable from an inadequate conception of mere diminishing utility.

Whether the term "rent" or "surplus" is the better designation of this sort of realized utility is open to question. Certainly the former term is rather much overworked and without a well-settled meaning. But the thing designated is not a fund but a continually replenished flow. "Rent" is, at any rate, income. It may be described as a succession or temporal series of surpluses. Hence the term "consumer's rent," which recognizes the character of the utility in question as income, is preferred to the other.

The doctrine of consumer's rent has suffered from misdirection at the hands of its name-father, Alfred Marshall.[1]

[1] *Principles of Economics*, book III, chap. IV, 1st ed., 1890, p. 175, where the term "consumer's rent" is used. In a footnote Marshall says: "The account of Consumer's Rent is here reproduced with slight alterations from some papers printed for private circulation in 1879." In the 5th edition, 1907, the term "consumer's surplus" appears. In 1890, the concept is defined practically in terms of price. The author's confidence in the suitability of money for the measurement of consumer's rent continues unabated. An acute critic of this conception (Hobson, *Economics*

The point of view of this essay is quite incompatible with his notion that it can be measured in terms of money. This is one more mistaken idea consequent upon the economist's too exclusive attention to the external and the commercial.

The effect of the difference in the value of money as between different individuals may be avoided by keeping to the point of view of a single individual, though this makes the money measure of consumer's rent of little interest. What a man will or may conceivably pay for an article, however, is even so not a safe measure of its contribution to his satisfaction, because the amount may measure instead the exigency of his situation or the strategic position of the article in relation to the relative supply and demand of it and other articles. In other words, transputed utility is not a part of consumer's rent. That portion of the value of an article which is transputed is not based upon its own utility; the basis is the contribution to satisfaction of a complete good, in which the conspicuousness of the member having transputed utility may be due to an accident of commerce. If transputed utility could be considered a part of consumer's rent, that utility might in the entire consumer's rent of an individual be counted any number of times. Even if we take account of the high value of money to those who possess so little of it, the total utility of the "submerged tenth" must be reckoned as less than proportionate to what is paid for food, because their circumstances impart to necessaries a high degree of transputed utility. That portion of total utility which we call consumer's rent, though nominally positive, may then be actually negative. Necessaries are valued no more than in proportion to their contribution to satisfaction only when such goods as those to the enjoyment of which they are preliminaries are also available. For the developed consciousness, under favor-

of Distribution, 1900, chap. II) still retains valuation in money, but limits the possible amount of an individual's consumer's rent to his income or even to his savings.

able circumstances, bare necessaries make no appreciable direct contribution to satisfaction.

Consumer's rent is a quantity that cannot be measured in money. The amount normally due to the utility of one article may be subject to subtraction for the sake of transputation to another. The higher ranges of the hypothetical curve of demand give no secure foundation for the calculation of amounts of consumer's rent.

If consumer's rent is often much smaller than a wrong method of measurement would make it appear to be, it is also sometimes greater than what is indicated by purchase prices obtained or reasonably to be expected for the goods which contribute to it. In previous chapters we have shown how, through substitution and rearrangement, the elasticity of consumption groupings usually makes complementary utility a net contribution to welfare, against which there is no compensating offset in the form of money-cost. Purchase price, even for the marginal unit, is proportioned to particular utility rather than to particular plus complementary utility.

Unimputable utility is another important element of consumer's rent that cannot be measured commercially. It is only misleading to attempt to state its quantity in terms of money.

Consumer's rent is the total utility less the summated marginal utility of a supply of goods. Or, in the case of a collection of heterogeneous goods, it is the total utility less the sum of the marginal utilities, which are themselves summated in so far as there are supplies as well as single goods in the collection. An individual's consumer's rent is the consumer's rent for him of all the goods he possesses or uses added together. The consumer's rent of a group of individuals may be conceived as the sum of the consumer's rents of its members. Total utility and consumer's rent are concepts equally applicable for one or for many supplies, and for one individual or for society as a whole.

The individual's total utility, and therefore his consumer's rent, is limited by his capacity to enjoy. In proportion to the primitiveness of the man's mind, such capacity may be small. Large capacity may be favored by natural refinement of disposition and developed by educational and other opportunities. But the man of refined tastes and sensibilities has an increased susceptibility to negative utility which is not entirely within his control. Thus his effective capacity for enjoyment is not so greatly increased as might appear. It may even be true that the zero level in the satisfaction of wants is a mean, and that positive and negative utility are relative to this mean. But this is extreme. The truth is doubtless between this and the ordinary assumption of an absolute and unchanging zero. Hence more goods do or may mean more satisfaction, even after the consumer becomes habituated to greater material abundance and refinement. Privation is not altogether relative. Total capacity is not a fixed or inelastic amount, the same for every one. The limitation upon it is not a case of tantalism.

Perhaps the practical deduction from the situation is that, after fundamental needs are well provided for, better ordering of what one has is wiser than the acquisition of more goods. The amount of consumer's rent is elastic and may be increased indefinitely. But the acquisition of a larger number of goods, however varied, is not the surest way to increase it. The study of complementary relations and the keeping of marginal subjective costs relatively low, often by simplifying one's demand, promise better.

Society's total utility, and therefore its consumer's rent, is likewise limited by capacity. It should be noted that, as used in the term "social consumer's rent," the conception of society is aggregate, not corporate. Society as such is not a consumer.

Consumer's rent increases with the expansion of the individual's income and possessions. The increase of means

makes possible the acquisition of more and better goods, and the goods themselves are acquired at less subjective cost, having therefore a lower marginal utility. Let us consider, chiefly by way of review and synthesis of what has already been said, what significance for satisfaction the expansion of income has, taking up first the expansion of the income of the individual, and secondly that of society.

The first few increments of income, which make it possible to keep body and soul together, yield no consumer's rent. Necessaries in the strictest sense, which are necessary both in amount and kind, give no net satisfaction, at any rate not unless mere animal appetite dominates existence to the exclusion of human qualities. If the amount of such goods obtainable is more than is absolutely necessary, however, the surplus may be made the means of leisure. Free time spent in idleness may be a sufficient source of satisfaction to an undeveloped being. He cannot have even so much unless he is somewhat released from the pressure of absolute economic necessity. The surplus and the leisure must be habitual and familiar before advance steps in the direction of the refinement of consumption are undertaken. Then the surplus of coarse necessaries is reduced in order to obtain variety and quality and interrelation in the articles consumed. Consumption thus comes to have human interest. The same ingenuity that diversifies and refines consumption will also increase man's productive powers; it is bootless to attempt to say which sort of progress comes first. Thus man reaches a stage where he obtains net satisfaction and consumer's rent. Further development in the variety of goods, or in their utilization, will yield further satisfaction. The contribution to satisfaction, that is, the utility of goods, has thus been increased by the addition of a net utility which did not exist before. It may be questioned whether the initial bare necessaries have any utility, humanly speaking. It is true in more senses than one that the physical basis of life is not life

itself. Thus, for a while, total utility has been increasing faster than income or possessions. During the process of the refinement of consumption into a human stage, the total utility expands at least in proportion to income or possessions, and the net utility or consumer's rent expands at a greater rate than income. This is the stage where complementary utility is so important, since the refinement of consumption, narrowly defined, is merely preliminary to the cultivation of such utilities, and if broadly conceived, the former includes the latter.

The above description smacks of primitive conditions and animal appetites in such a way as may suggest that it gives the writer's conception of how consumption may have evolved. Perhaps it does, but it is intended more particularly to apply to the different strata of present-day society. If there is no class in the United States whose consumption is confined strictly to necessaries as defined above, there are some few human beings near enough to such a state to make clear its meaning, both as regards the little that life can yield to those so circumstanced and as regards the primitive or animal nature of their existence.

Perhaps a given individual is incapacitated for passing directly from such a status to a better economic condition. But we find other individuals in the somewhat higher social stratum where the refinement of consumption is begun and where the elements of human conditions of life are at hand. Still higher up, the cultivation of complementary utilities may be sufficiently favored to be the main resource of consumption. Limitations of supply are still felt, but the follies of certain economico-social ambitions being thus forestalled, the situation may be the better for the necessary restraint.

Parallel with the refinement of consumption and with the development of complementary utilities goes greater emphasis upon durability in goods, and thus upon existential utilities as sources of enjoyment. This also is a phase of

the evolution of consumer's rent. Below is barrenness of life, and beyond, a barrenness of goods perhaps equally futile. The danger of clogging by sheer multiplicity of possessions, which processive enjoyments escape, is lessened by limitation of pecuniary means. A due proportion between existential and processive expenditure will still obtain, but the proportion will naturally be more in favor of the former as the situation of the consumer improves. No distinction need here be made between this development and the cultivation of multiple utilities, though the latter is of course conditioned by degree of collective intelligence.

It is at about this stage that a given absolute amount of income normally yields its maximum absolute amount of utility. It is probable, too, that there is no stage where the net amount of utility, or the consumer's rent, is greater. An abundance of goods which permits casting aside moderation is perhaps too rich a soil for the hardier growths that are alone capable of making thoroughly positive and independent contributions to happiness.

To pursue further the effect of the expansion of the individual's income upon his total utility and consumer's rent is scarcely called for. The rest is mainly the field of the delusions of adventitious utility. Too many men, or their representatives in consumption, are so constituted that they fit well into the vanities of such a scheme of things and lead a useless life without the consciousness of being the pitiable puppets of circumstance. The evils of adventitious practices and institutions, however, are of less importance as regards those who can become wholly absorbed and lost in them than as regards the distraction and the loss of time that they impose on really capable persons who must perforce conform somewhat to the demands of their social station and of "society." That their income is sufficiently large to press them to do so is their misfortune, a misfortune which in terms of economics means not merely that the enlarged income has brought little or no additional

utility, but that it has reduced the amount of satisfaction below that which is obtainable by a modest and self-contained economy. To have little enough of temporal goods to excuse one to one's self and others for exercising a plebeian restraint in consumption is very helpful.

The income of society, also, that is, the net amount *per capita* annually available for consumption, may be viewed as expanding through the various stages from privation to superabundance. Since the distribution will not be even, the privation or superabundance must be supposed to be an average or *per capita* condition.

The measure of utility is still contribution to satisfaction. Increase of values is not significant. Whether an increase of values will actually accompany abundance or superabundance of goods is a question whose answer depends altogether upon what is meant by value, and in particular upon whether commercial value is in some sense absolute or merely a measure of relative power in exchange. In the case of national wealth, however, complete subsumption under exchange value is not usual among economists. It would be generally admitted that national wealth is not adequately measured by the sum of values. The ground is thus prepared for the standpoint of utility.

There are wastes and economies possible in the consumption of a social group which do not appear in the individual's consumption considered abstractly by itself. The great social waste is adventitious consumption, which has already been sufficiently discussed. There is need of a moral awakening in this particular.

The greatest social economy possible to effect in consumption lies in the direction of developing multiple utilities. This also has been discussed. Those things which are adapted to furnishing multiple utility afford unlimited scope for the future evolution of consumption. The possibilities would be greater still if human nature should ever become such that men could be entirely trusted to

exercise care in the use of things not their own private property.

In so far as the average is also the typical and usual situation as regards the distribution of wealth, that is, in so far as we can suppose equality to hold for the various stages of our hypothetical comparison, the effect of the expansion of national wealth will be simply the sum of the effects on individuals, with one or two important qualifications. Adventitious utility flourishes best in an atmosphere of inequalities, hence there would be little encouragement to its growth under the conditions supposed. Economic equality would, on the other hand, favor as much as possible coöperative enterprises in consumption and the cultivation of multiple utility. In fact, it is to be doubted whether any better use could be found for greatly increased individual means than to turn the surplus over to voluntary associations or to the community for expenditure upon objects of multiple utility. The unimputable utilities of a fortunate natural environment can also be the more surely preserved and treasured, and the better cared for, by a society having abundance of material resources obtainable without exhaustive use of nature's gifts, and without the incentive to selfish ambition fomented by inequality.

If along with abundance or superabundance of wealth, however, there comes a high degree of economic inequality, the situation will be quite different. The increase of means will bring greatly increased expenditure for multiple utilities, either from the philanthropic gifts of the rich or from the proceeds of taxation. But some of the public expenditure even is likely to be tainted with elements of adventitious utility. Moreover, the state of mind of the people will probably be so influenced by the adventitious practices of the rich in personal expenditure that they will not appreciate institutions of multiple utility as they should. They will not care for them as for their own, and the expenses of administration of such utilities will therefore be unduly high. The

ambition to be rich and to indulge in wasteful and adventitious expenditure, and the reflected bitterness and envy of those not able to compete, will taint life more and more in proportion to abundance if a high degree of inequality goes with it. The leaders of society will be only the more effective as leaders to destruction. In the early stages of economic evolution, such was not the case. When it was possible for only a few to have leisure, inequality was necessary to progress. Where all can have leisure, a marked degree of inequality of economic means is not necessary for leadership, and it is likely to signify instead a bad example set by the idle rich.

It was the great fault of the classical school of economic thought — a defect frequently shared by their severest critics — that it assumed that maximum production, or maximum income and possessions, was the end and criterion of the economic activities of society. As a rough first step in analysis this is not bad. But, looking beyond economic or exchange value to the utility from which it has its being, we find it is not to be taken for granted that maximum utility results from maximum wealth. All depends upon the distribution of wealth. Assuming a high degree of abundance as a possibility for all or most of the members of society, then the most desirable state of distribution is one of approximate equality. Wealth that is put to a use that has only necessarily and instinctively transputed utility serves no human purpose. It is wasted. Still clearer and greater, in an advanced stage of economic evolution, is the waste of the wealth that serves only adventitious ends. Real utility lies between these extremes. In order to obtain the greatest amount of true utility from a given amount of wealth, it should be so distributed as to constitute only moderate incomes.

Not only total true utility, but the consumer's rent composed of such utility — and it is properly composed of nothing else — will thus be greatest in a society where

wealth is evenly distributed. The lowest social classes are at a disadvantage in their attempts to obtain consumer's rent, not only on account of the transputation of utility due to their neccssities, but also on account of high costs and high marginal utility. The very rich, on the other hand, often obtain no true utility from their great riches, therefore *a fortiori* no net utility.

One very important effect of the increase of income and possessions is sometimes forgotten, that is, its bearing on the utility of leisure or of free time. As goods become more and more abundant, further goods are less desirable than further free time, the marginal utility of goods as compared with the marginal utility of leisure, so to speak, declining till preference is given to free time. As goods accumulate, it is to be expected that both more thought and more time should be given to making use of them. In so far as it is true that labor and life, or enjoyment, will not mingle, an increase in the productiveness of labor that does not bring greater leisure is wrong somewhere.

Control and management of goods, or material means of welfare, constitute the essence of economy. The science of economics, therefore, in so far as it inculcates anything, — as it is bound to do, not directly, but by implication, — teaches the limitation of individual accumulation. It points towards simplicity of life, not in the perverted sense of doing without worldly goods, but in the sense of exercising moderation or restraint in their accumulation. If the older economics appeared to support the contrary principle, this was because it occupied itself too much with production. Goods should be valued by their possessor only as there is time and energy to make use of them. This is just as true as is the converse proposition that material means are required in order to make anything of time and life. That most may be made of life by those who are not bothered, and do not bother themselves, with either extreme of poverty or riches is a truth seldom seen whole.

CHAPTER XVIII

OF CERTAIN PRACTICAL APPLICATIONS

THE writer is only secondarily concerned with the practical application of the theories above discussed. But he could not conceal, if he would, the significance of this examination of the variation of utility for passing judgment upon the wastefulness, at both extremes of the social scale, of the present economic order. Especially direct and clear is its bearing upon the expenditures of the rich, and upon the justifiability of such a division of the social income as turns so much of it to adventitious use.

To say that enjoyment (or utility) does not increase in proportion as riches or property increase is to reiterate a commonplace of economic discussion. It is to be presumed that this proposition has received some accession of content and meaning from the foregoing chapters. The diminution of utility at a diminishing rate, though fundamental, falls much short of the whole truth, yet even with only so much established, the passing of judgment upon an economic institution merely with reference to the magnitude of its physical contribution to production is presumptuous. Free trade has often been praised too much and socialism too much condemned on such a basis. It is no sufficient excuse that insight into the tendencies and effects of production in relation to possibilities of rational enjoyment is not easy to obtain.

"The chief enjoyment of riches consists in the parade of riches." [1] Adam Smith thus tersely puts the point that

[1] "With the greater part of rich people, the chief enjoyment of riches consists in the parade of riches, which in their eye is never so complete as when they appear to possess those decisive marks of opulence which no-

we have developed in detail as a doctrine of adventitious utility. So far as these words are true, riches serve no worthy purpose. They do hold true for the majority of the very rich, some of whom have such ends more or less consciously before them, while many merely conform to conventional standards and demands of fashion which are themselves determined by adventitious motives and tendencies. Only for a minority are the acquisition and use of riches incidents of activities more rational and more moral. The typical forms of expenditure of the very rich are thus at best wasteful and at worst anti-social. They arouse jealousy and envy, and evidence an unfeeling lack of imagination for the effect upon others of such conduct. Even where the idle rich kill time with the aid of the fine arts, they demoralize taste with ostentation. Their bidding-up of the price of curios and rarities of all sorts measures their lack of moderation. But their capricious monopolization of certain rare articles shows more discrimination than most of their activities do. Nevertheless, it too often takes these articles away from their natural setting and deprives them of a portion of their real complementary utility. The expenditures of the rich commonly disturb the equilibrium of prices for goods and services and give the merchant too much training in exploiting his customers through charging what the traffic will bear.

While we may thus properly condemn the ordinary forms of expenditure of the rich, and thus to a degree riches themselves, — for their justification must depend upon their having a social function, — it is not therefore necessarily true that execution should follow judgment. No public agency can be trusted to prescribe the direction expenditure shall take. Even so, sumptuary laws would be but palliatives. Legislation would do better to attack the root of the evil, that is, the inequality in the distribution

body can possess but themselves." *Wealth of Nations*, book I, chap. XI, part II, p. 173.

of wealth. It is likely that the state will soon do this, largely through its fiscal policies and through reformation of the laws of inheritance. This would amount merely to carrying out policies in which the first steps have already been taken.

The rich, and especially the rich in America, have not been so lacking in intelligence as altogether to fail to see the vanity and futility of adventitious expenditure or of the attempt entirely to dispose of their surplus for merely personal ends. Convention and fashion blind men all too easily to the presence of adventitious utility. But the absence of an aristocratic tradition of high life and idleness here has made the situation somewhat better than it is in other countries. Rich men who want something for their money, and who are also not averse to making their aims social rather than merely personal, have often devoted their resources to philanthropic and educational purposes on a scale unknown before. They should receive due credit for their intelligence and public-spiritedness, whether their motive be pure altruism or in part enlightened egoism.

It is conceivable that their public-spiritedness might carry some of them so far as to leave for their children unearned property and income only in such amount as to put them without labor on a level with the members of the professional classes, who live comfortably but who do so only because of their daily labor for society. If so, such a consummation would certainly be no calamity, either for their descendants or for the rest of society. Here is the proper criterion, perhaps, for the just limit on the amount of property and income inheritable by a single individual. The permanent incomes received by inheritance or gift should not exceed the limit of the greatest earned incomes as determined by the highest salaries paid for industrial or other services. An inherited income of $100,000 a year is plenty. Society would be benefited all around if, by a

well-devised fiscal policy, and by the regulation of inheritance, the state should gradually make effective some such limitation, thus preventing an inverse selection of individuals and families to receive the greatest amount of riches, that is, a selection favoring those least inclined by heredity or by familiar example to philanthropy and public spirit. American millionaires are distinguished for generous philanthropy perhaps largely because they are, to so great an extent, of the "new rich." It has been observed that the oldest of our multi-millionaire families are not notably philanthropic.

This is by no means the same as saying that the institution of inheritance is of no benefit to society and ought to be abolished. Its value to society is of the same order as is the value of the educational advantages freely given by parents to their children. It has therefore played a leading part in the evolution of civilization. There is no reason to suppose its usefulness is at an end. But that usefulness is nowise proportioned to the amount of property given or transmitted to the individual beneficiary. Quite the contrary is true. A limited amount of inherited property is of greater benefit to the individual by reason of the limitation. The extent of the benefit conferred, moreover, is thereby multiplied, for the number of direct beneficiaries becomes proportionate to the total amount of riches. Whatever of reflected value, also, the institution may have for society is thus more generally diffused. If the time ever comes when nobody can be a multi-millionaire by inheritance, the institution will be of greater social value than now.

Both ethics and economics must go beyond positive law and examine its grounds. Legal rights are subject to evolution. Of their very nature, moreover, as based upon precedent, they may be presumed to be in chronic need of reform. The evolution of abstract property, of which securities are the familiar type, has somewhat changed the

situation from what it was in the days of Locke and of England's 17th century revolutions in defense of "life, liberty, and property." That is a significant alteration which the Declaration of Independence made in this phrase, substituting for property "the pursuit of happiness." Are existing laws in relation to property and its inheritance merely such as protect the rights of the individual in his pursuit of happiness? If not, what modes of division of the social income will most facilitate such an end? If the right of private property is essential to the right to the pursuit of happiness in so far as happiness depends upon the control of material means, — which is but another way of putting Locke's idea that a man should have property in that with which he has mixed his labor, — and if that right is defensible only in so far as it is thus essential, then the desirability of certain changes in property rights must be deduced from the foregoing discussion. A change in law and public policy with regard to the inheritance of large fortunes is what seems to be particularly needed. That the evolution of forms of property right has very much altered the situation from what it was a few hundred years ago is significant in this connection, but not pertinent to our study of consumption.

These pages contain some remarks about the rich which may be regarded as uncomplimentary. They have wherewith to console themselves, and wherewith to conciliate more respect of a certain sort than is their due. But in order that we may not appear to exhibit partiality and to discriminate unfairly in our remarks touching invidious motives and adventitious ends, we should add that the ambition to be and "to do" rich, as that would ordinarily have to be interpreted in the concrete, puts the one so absorbed into the same class morally with those who are successful in this ambition. The category is no doubt very inclusive. Human nature in general is absurdly invidious in its judgments and aspirations. The social fabric and

the daily practices of men are permeated through and through with wasteful vanities and trivial ambitions. The economic evils resulting are most noticeable, not where inclination is strongest, but where opportunity is greatest. Those who are successful in achieving riches are on the whole only the more efficient ones in a large class, the other members of which are not morally better but only less able than they. Lest this be undue praise, however, let us hasten to add that practical efficiency is often made such by narrowness, whether natural-born or due to force of circumstances. This disease of adventitious enjoyment ought to be in large part curable by enlightenment, but some traces of the evil must remain till human nature itself is made over.

There is another phase of waste of utility besides that due to the traditional follies of the rich, perhaps equally important in magnitude. At the lower end of the economic scale are those whose consumption maintains their existence, but who are not able to live humanly. As a minus quantity is less than zero, so bare subsistence is, from an economic point of view, worse than the cessation of existence.

If it is less easy to make some practical application of this fact than it is of the knowledge of evil conditions at the other end of the social scale, that should not make us less ready to look the fact in the face. We must recognize that the waste of life through the continuance and multiplication of existences at the lower extremity of society is not merely, indeed not mainly, an economic question. Humanitarian considerations may properly count for more than economic reasons here, while, in the case of the expenditure of the rich, economic reasons afford the sufficient basis for judgment. Our own humanity — something quite different from pity for the sufferings of the poorest or (objectively) most miserable — is reasonably what prevents society from putting them out of the way by the use

of chloroform or some equivalent means. So nature is left to perform the operation without the use of an anæsthetic. In this economic essay we may be excused from even suggesting a solution for so large a sociological problem. Hence the greater space devoted to the essentially economic problem at the other extreme of society.

The use of goods to maintain life where there are no further goods to make life worth maintaining is an economic absurdity. The reckoning of the value of such beings to society is one of the curious misapplications of the concept of economic value. A man may have much value to his fellows, but it is, or ought to be, chiefly other than economic. The value of men to one another, also, is reciprocal and complementary, hence not to be arrived at by inventory. So far as the value of one man to another is economic, the net amount must often be negative. The loss of the "value" of a man should be compared with the effect on a balance-sheet of wiping out asset and corresponding liability at the same time. Certainly society is indebted to every man for something, but every man is in turn the beneficiary of society. The balance or net, even on the average, is not at all times and places in favor of society. If the "submerged tenth" receives little from society, its members usually give even less. Their existence is, also, humanly speaking, worth nothing to themselves. If it may be made so to others, by what right? A system of slave labor might use them, but a free and inclusive democratic society cannot.

Thus democracy is a society of peers. A democrat is not a leveler. He would, it is true, destroy causes of artificial elevation. But as regards personal qualities, his standard for membership in this society of peers may be as high and as exclusive as his ideals will make it. The standard may easier be high than low. He is no democrat who claims for the naturally inferior equal rights. The democrat would have all equals, and all worthy to be so. He would there-

fore abolish the inferior. He would have no hierarchies. He has no use for the lord, or the vassal, or the slave. Patronalism and paternal or Tory socialism do find places for the inferior and for natural slaves. True democracy cannot. The democrat will not use a fellow-man for merely personal ends.

Our conclusions — that the means of bare existence are of no utility or of contingent utility only, that moderate incomes are good in themselves and good for society, and that great incomes, especially great inherited incomes, mean principally a waste of utilities — are an incidental outcome of this analysis of the modes of variation of utility. That we are thus brought to the "golden" mean as an ideal of economics is interesting. This rule of moderation should work both ways. Adequacy of means and simplicity in the conduct of life meet at this point. But modern preaching, neglectful enough of both sides, is especially afraid of one half of this conclusion. That it is as difficult for the rich man, *in propria persona*, to enter heaven as for the camel to pass through the needle's eye is true, but so also is the view of Aristotle, that virtue and happiness plainly require adequate means, including economic goods.

THE END

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